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SITE CLOSURE PLAN
HELEVA LANDFILL SITE
LEHIGH COUNTY, PENNSYLVANIA

PREPARED FOR:

U.S. ARMY CORPS OF ENGINEERS
OMAHA DISTRICT
COE PROJECT MANAGER - MR. MIGUEL CINIRON

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I. INTRODUCTION

The Heleva landfill site is to be remediated with an impermeable cap as part of the ROD (record of decision) issued from the RI/FS investigation at the site. The closure plan for this remediation is presented in this document. As a portion of the design effort directed by the COE for USEPA Region III, a site closure plan was required. It was developed based on available design information. Although it addresses the significant requirements of RCRA and 40 CFR, Part 264, Subparts F, 6, and N under present conditions, all regulations can't be complied with. Long-term monitoring and maintenance of the site are addressed.

II. SITE DESCRIPTION

The Heleva Landfill site consists of a 20-acre landfill located on a 93-acre tract of land owned by Stephen Heleva in North Whitehall Township, Lehigh County, Pennsylvania. The site is located off of Hill Street near the Village of Ormrod (see figure 1).

The site was originally a large open-pit iron ore mining operation. It began operations as a sanitary landfill in 1967, receiving 250-350 tons/day of general mixed refuse, paper, wood, and orchard wastes from the Allentown area. In addition, an undetermined amount of industrial wastes was reported to have been sent to the site as early as 1967. These wastes included, or were believed to include, chlorinated hydrocarbon solvents, of which several were aromatics, esters, ethers, benzene, and phenols. According to the remedial investigation/ feasibility study (RI/FS), trichloroethylene (TCE), an industrial cleaning solvent, was reportedly dumped in numerous areas of the landfill.

The landfill site and immediate vicinity actually covers an area that was worked as four separate mines. Three of these sites now contain ponds, and the fourth, the largest, is mainly under the fill itself. (See Appendix A drawing C-3). These mines were of the open pit type, and included the construction tunnels emanating horizontally from the open pits. Although the locations and lengths of the tunnels are not well defined, it has been estimated that they extended 200 - 300 ft. in the direction of Ormrod.

Numerous site investigations have previously been conducted that have focused on the past activities at the landfill site. These include a hydrogeologic investigation by Nassaux-Hemsley Inc. (1977), the RI/FS investigation by NUS (1985), and a treatability study by Lawler, Matusky, and Skelly Engineers (1987). The following is a summary of past activities extracted from these reports.

During the period 1974 to 1981, a hydrogeologic investigation of the site was conducted. During that investigation, 15 wells were installed at the site to determine the geologic and hydrogeologic conditions, and it became apparent that high concentrations (100 mg/l) of TCE were present in the ground water of Well B-7 on the southern margin of the landfill. In an attempt to remediate the high levels of TCE, four additional 6-in. wells were installed in close proximity to B-7 in order to operate an experimental in situ bioreclamation project.

In 1984, a comprehensive RI/FS was performed at the Heleva Landfill to characterize the nature and extent of contamination at the site. The investigation consisted of a multimedia environmental sampling program and a subsurface investigation.

III. AREAS TO BE ADDRESSED AT CLOSURE

This closure plan identifies the steps that will be necessary to close the Heleva Landfill Superfund site. The closure will consist of the construction of a capping system meeting the intent of the RCRA guidelines and post-closure monitoring. The cap will cover an area of ±18 acres and will include runoff/runoff controls. All hazardous materials will remain on-site.

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IV. CLOSURE PLAN

A. Closure Performance Standard

The Heleva landfill will be closed with a cap designed to comply with the requirements of 40 CFR 264.310, Subpart N. Although the landfill is regulated under CERCLA, the RCRA 264 closure performance standard has been used where possible. Specifically, the landfill, will be closed with a cap which is designed to:

- Provide long-term (30 years) minimization of migration of liquids through the landfill
- Function with minimum maintenance
- Promote drainage and minimize erosion or abrasion of the cap
- Accommodate settling and subsidence so that the cap's integrity is maintained
- Have a permeability less than or equal to the permeability of the natural subsoils present
- Minimize to the extent practical, the threat to human health and the environment, post-closure escape of hazardous constituents or waste, and contamination of ground water or surface water resources

The closure of the landfill will consist of the construction of a capping system and limited ground water monitoring. Contaminated soils will be left in place. Corrective action for remediation of existing ground water contamination will not be a part of this closure.

Since ground water beneath and downgradient from the landfill has been impacted a post-closure monitoring is proposed in Section VII. However, the 264 post-closure monitoring requirements cannot be met because the extent of contamination has not been defined and no ground water corrective action is presently proposed in this closure plan. Additional hydrogeological investigations and the design of a corrective action system will be necessary to meet the 264 post-closure monitoring standards.

The CERCLA closure of the landfill will include an assessment monitoring program which will monitor any releases from the landfill boundaries. This assessment monitoring program is described in Section VII.

B. Closure Procedures

This closure plan outlines the steps that will be taken during closure of the Heleva Landfill Superfund Site. US COE does not currently foresee the need to initiate closure activities on these surface impoundments prior to the approval of the closure plan. If such a need does arise, the closure plan will be modified to include a description of those activities that have occurred prior to closure plan approval. If an unexpected event occurs during the partial or final closure period, the closure plan will be amended no later than 30 days after the unexpected event.

Closure activities will be overseen on a daily basis by a construction inspector who will be responsible for maintaining a log of closure activities. Key steps in the closure will also be overseen by the independent engineer who will be responsible for certifying that closure activities were completed in accordance with this closure plan.

The surface impoundments will be closed in accordance with the closure requirements for landfills as specified in 40 CFR 264 Subpart N. All waste will remain in place. The landfill will be filled with compacted material and capped for final closure. This closure process will minimize post-closure escape of hazardous waste constituents, leachate, contaminated rainfall, or waste decomposition products to the ground water, surface waters, or atmosphere.

Following is an outline of the closure procedures to be used during the construction period. The construction drawings (see Appendix A) and the construction specifications (see Appendix B) for this project are referenced if more detailed information is desired.

1. Site Layout

Prior to actual closure of the landfill, a number of site preparation activities must take place. This work is shown on Drawing No. C-3 - (SITE LAYOUT) and referenced Detail Drawings and Specifications. Included in this work is the TCE area fence removal, signing, power pole relocation, monitoring well abandonment, preparation of contractor parking and laydown area, preparation of decontamination area, placement of contractor/laboratory/US COE trailers, construction of gravel access road, rip rapping of existing ditches, and fencing the construction site.

2. Clearing and Grading

Prior to construction of the final capping system the landfill site must be prepared. This work is described in the Specifications and shown on Drawing No. C-4 and referenced Detail Sheets. This work includes clearing and grubbing, draining of the collection pond by pumping to Todd

Lake, regrading existing material and hauling, and placing and compacting offsite leveling material. When this work is complete the site will be ready for installation of the final capping system.

3. Cover System

The cover system for the Heleva Landfill Superfund Site includes settlement markers, gas vents, drainage ditches, and the multi-layered cap. Drawings No. C-5 through C-10 (see Appendix A) and the Specifications (see Appendix B) provide detailed information on each of these components. The multilayer final cap is composed of the nine (9) following layers (see Drawing C-9, detail 9):

- 1 - 6" layer of select fill
- 2 - Geotextile cushion layer
- 3 - 60 mil High Density Polyethylene (HDPE) membrane
- 4 - Geotextile drainage layer
- 5 - Drainage layer (either 6" of sand or synthetic drainage layer)
- 6 - Filter fabric layer
- 7 - 6" layer of select fill
- 8 - 6" layer of topsoil
- 9 - Erosion control mat (where required) and grass

C. Maximum Waste Inventory

All hazardous materials on this site will remain on the site. Construction will be phased so that any hazardous materials that are excavated during the construction of the cap and capping system will be placed underneath the cap.

The collection pond water and sludge will be analyzed and if shown to contain no hazardous constituents will be pumped to the

NE Pond No. 1 (see Appendix D).

During construction all equipment that comes into contact with hazardous materials, will be decontaminated. The wash water will be collected and containerized. This containerized water will then be disposed of properly.

D. Closure Schedule

Construction of the closure of the Heleva Landfill Superfund Site is scheduled to begin in the 1988 construction season. The following schedule does not consider days for weather delays.

<u>Task</u>	<u>Day</u>	<u>Duration</u>
Bid Opening	0	
Award of Contract	15	15
Notice to Proceed	30	15
Mobilize at Site	90	60
Complete Closure	210	120
Deed to State	240	30

E. Decontamination of Equipment

All equipment used during the closure which has come into direct contact with hazardous waste will be decontaminated to a level suitable for reuse. This will include pumps, dump trucks, loaders, excavation and grading equipment, drilling equipment, and any other equipment contacting hazardous waste. The contractor will be responsible for decontamination of all equipment.

The decontamination (equipment washdown) area will be located as shown on Drawing C-3, SITE LAYOUT. Detailed design information is shown on Drawing C-10, MISCELLANEOUS SECTIONS AND DETAILS (see Appendix A).

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The equipment to be decontaminated will be brought inside decontamination area. The equipment will then be rinsed with a high pressure water jet until no visible residue remains on the equipment. All rinse water will then be collected in a truck and properly disposed off site. Equipment will be considered decontaminated when all visible contamination has been removed. An estimate of the cost for decontamination is presented in Section V.

F. Run-On, Run-Off, and Infiltration Control

The final cover will be sloped in a manner that will facilitate the drainage of precipitation away from the areas being closed. Drainage from the remainder of the property will be diverted away from the capped landfill to prevent run-on. The drainage contours for the landfill after closure are depicted on Drawing No. C-6, FINAL SITE PLAN.

The use of a 60 mil HDPE membrane with an overlying drainage layer will essentially eliminate any infiltration into the closed landfill. In addition, the 5 percent slope will allow significant settlement without ponding occurring.

V. CLOSURE COST ESTIMATE

The closure cost estimate is based on the Final Design Cost Estimate. The Final Design Cost Estimate summary sheet that follows contains all the information for the closure cost estimate. The soil testing is a separate line item on the summary sheet. The costs for certification that the site was closed according to the contract documents and this closure plan is contained in the S&A costs. If more detailed information is desired see the Final Design Cost Estimate contained in Appendix C.

VI. CLOSURE CERTIFICATION

Within 60 days of the completion of closure of the surface impoundment, and within 60 days of the completion of final closure, a certification statement similar to the Closure Certification Statement shown in Figure 2 will be completed and submitted by registered mail or equivalent method documenting delivery to the Administrator of the Environmental Protection Agency Region III. This statement will certify that the landfill has been closed in accordance with the approved closure plan. Documentation supporting the engineer's certification will be furnished to the Administrator of the Environmental Protection Agency Region III upon request.

FIGURE 2

CLOSURE CERTIFICATION STATEMENT

(Contractor), hereby certifies that closure of Heleva Landfill Superfund Site was completed in accordance with the specifications in the approved Closure Plan.

Contractor's Representative

Title Date

I have reviewed the Closure Plan documents for the Heleva Landfill Superfund Site. I have also inspected the site before, during, and after the specified closure activities. Based on my review of the Closure Plan documents and inspection of the site, I hereby certify that, to the best of my knowledge and belief, the surface impoundment has been closed in accordance with the specifications of the Closure Plan.

Professional Engineer Registered in
Pennsylvania

Date

VII. POST-CLOSURE PLAN

This post-closure plan addresses the maintenance and monitoring activities that will take place following the closure of the Heleva Landfill Superfund Site. The post-closure activities will begin following the completion of closure regardless of whether or not the Post-Closure Permit has been issued. The maintenance and monitoring activities described below will continue for the length of the post-closure care period. This post-closure period will begin upon completion of closure and will continue for 30 years after that date or until a variance or delisting has been granted.

The facility contact for information concerning the post-closure plan is listed below:

The State of Pennsylvania will be responsible for the storage and updating of the copies of the post-closure plan during the post-closure care period. The State of Pennsylvania will also be responsible for providing the updated information to outside organizations or agencies which have official copies of the plan. If changes in the operating plans, the facility design, or an unexpected event occurs before or after closure which affects the post-closure plan, the State of Pennsylvania will submit a modified post-closure plan within 60 days of the change or event.

A. Required Notices

1. Survey Plat for Local Land Authority

Within 90 days after closure is completed, the State of Pennsylvania will submit to the local land use authority and to the state regulatory agency, a survey plat indicating the location and dimensions of the Heleva Landfill Superfund Site with respect to permanently surveyed benchmarks. This plat will be prepared and certified by a professional land

surveyor. The plat will contain a note, prominently displayed, which states the State of Pennsylvania's obligation to restrict disturbances of the site in accordance with 40 CFR 264. This regulation requires that the post-closure activities must never be allowed to disturb the integrity of final cover or any components of any capping system, or the function of the facility's monitoring systems, unless it is found that the disturbance:

- a. Is necessary to the proposed use of the property and will not increase the potential hazard to human health or the environment; or
- b. Is necessary to reduce a threat to human health or the environment.

2. Notice to Local Land Authority

The State of Pennsylvania will also submit to the local land use authority and to the state regulatory agency a record of the type, location, and quantity of the hazardous waste remaining in the Heleva Landfill Superfund Site at the time of closure. This notice will be submitted within 60 days of certification of closure of the hazardous waste landfill.

3. Notice in Deed to Property

The State of Pennsylvania will record, in accordance with State law, a notation on the deed to the facility property - or some other instrument which is normally examined during a title search - that will in perpetuity notify any potential purchaser of the property that:

- a. The land has been used to manage hazardous wastes;
- b. Its use is restricted under 40 CFR 264; and

- c. The survey plat and record of the type, location, and quantity of hazardous waste remaining at the time of closure have been filed with the local land use authority and with the State Regulatory Agency.

The State of Pennsylvania will sign and submit a certification to the State Regulatory Agency stating that the above notation has been filed. This will include a copy of the document on which the notation has been made. The notice in the deed and the certification will both be completed within 60 days of closure of the hazardous waste landfill.

4. Certification

Upon completion of the post-closure care period for the surface impoundment which has not received a variance or a delisting, a certification will be submitted by registered mail or equivalent method stating that post-closure care for the landfill was performed in accordance with the approved post-closure care plan for the length of the post-closure care period. This certification will be signed by the State of Pennsylvania and an independent registered professional engineer licensed in Pennsylvania. Documentation supporting the engineers certification will be maintained until the State of Pennsylvania has been released from the financial assurance requirements.

B. Post-Closure Inspection and Maintenance

Following closure, the surface impoundment area will be inspected at least annually to ensure that the final cover, existing security fence and groundwater monitoring system are maintained in proper working order throughout the post-closure period. Informal check of these items will be conducted each time personnel visit the site. During post-closure monitoring, a

formal inspection will be conducted at least quarterly; i.e., when the groundwater samples are collected. This inspection will be conducted annually until the end of the post-closure period. The items to be checked during inspections are listed in Table 1. A sample inspection checklist is provided in Table 2.

The cost for the post-closure inspections is estimated to be \$200 per year. During the time when quarterly sampling is being conducted, the inspection will be conducted at the same time as the samples are collected. The cost for traveling to and from the site is included in the sampling cost. Each well will be inspected while it is being sampled. The additional cost for inspecting the fence and final cover is estimated to be \$50 per quarter or \$200 per year. If it is necessary to conduct an inspection after the groundwater sampling has been completed, the cost for traveling to and from the site and checking the wells, fence, and final cover is estimated to be \$200 per year. During this period only one inspection will be conducted annually.

Maintenance for the security fence and groundwater monitoring systems will consist of occasional repair or replacement of equipment that is damaged through normal use or vandalism. Examples of such repairs are replacement of missing or damaged locks, gates or fencing; repair of cracked cement surface seals, well casings, or protective well coverings; and repair of eroded drainage ditches or cap surface areas.

Gas vents will be inspected annually. Possible repair of the seal between the HDPE and the well casing may be required on approximately one-third of the wells over the post-closure care period. This would average approximately 2 wells per year at a cost of approximately \$200 each.

The upper layer of the capping system over time will incur some settlement, erosion, growth of unsuitable vegetation, and loss of

grass cover in certain areas. None of this deterioration should extend below the filter fabric which is 12 inches below the surface. Annual maintenance will involve replacing eroded soil or settled areas including compacting, reseeding, removing of unsuitable vegetation, and reseeding where grass cover has been lost. Approximately 30% of the top 12 inch surface may need repairing over the 30 year period due to one of the above mentioned problems.

The drainage ditch system on the landfill cap will be inspected quarterly. Repairs to rip rap and/or underlying filter fabric will be performed quarterly if necessary.

The final cover will be surveyed at the time of closure and then during years 1, 5, 10, 15, 20, 25 and 30 to determine if settlement has occurred. If settlement has occurred to the point where proper drainage no longer occurs, the faulty area will be dug out, additional geotextile and/or drainage material and/or filter fabric and/or compacted material will be added, and the area will be reseeded and covered with an erosion control mat.

TABLE 1
POST-CLOSURE INSPECTION PROCEDURES

<u>Area</u>	<u>Items to Check</u>	<u>Potential Problems</u>
Security Fence Surrounding Closed Impoundment	Gates; locks; fence posts; fence	Vandalism; washout; corrosion; severe rusting.
Ground Water Monitoring Wells	Well casing; cement surface seal; lock; protective metal cage	Well casing damaged; cracked or broken cement; damaged or missing lock; damaged metal casing.
Landfill Cap	Grass cover; settlement markers	Erosion; unsuitable vegetation; loss of grass in area; ponding due to settlement.
Drainage Ditches	Rip rap, filter fabric	Loss of rip rap; filter fabric repair.
Gas Vents	Seal with HDPE	Clogged vents; broken seals with HDPE

TABLE 2

POST-CLOSURE INSPECTION CHECKLIST

Facility Name _____ DATE _____
Inspector's Name _____ TIME _____
Inspector's Signature _____
Comments _____

<u>Area Inspected</u>	<u>Problems or Potential Problems Noted</u>	<u>Date and nature Remedial Action</u>
Security Fence		
Landfill Cap		
Ground Watering Monitoring Wells		
Drainage Ditches		
Gas Vents		

C. Post-Closure Monitoring Program

1. Introduction

Post-closure monitoring will be implemented with the existing monitoring well network to:

- ° Evaluate hazardous constituents migrating from the landfill
- ° Establish base line data of hazardous constituent releases
- ° Determine changes over time in the concentrations of hazardous constituents released from the landfill

At this time, the monitoring network will consist of 11 existing wells and will continue for a period of 30 years. If additional monitoring wells are installed to identify the extent of the contaminant plume and a corrective action system is designed and implemented, this monitoring program will be amended to comply with the corrective action monitoring program under 40 CFR 264.97 and 264.100.

The monitoring well system as shown in Figure 3 will consist of the following wells:

MW-2B
- MW-3B (Background Well)
B-11
MW-12B
MW-104
MW-102
MW-101
MW-103
MW-10B
MW-13A
MW-11B

The above wells will be sampled quarterly for the hazardous constituents listed in Table 3. The background well MW-3B in addition to the constituents shown in Table 3 will be sampled for Appendix IX constituents as will the most contaminated well outside of the closure area, MW-11B. If the Appendix IX analyses indicate hazardous constituents other than those listed in Table 3, the additional parameters will be added to Table 3 and included in the quarterly analyses. During the post-closure monitoring period, quarterly and annual reports will be prepared and submitted to the State of Pennsylvania Department of Environmental Resources.

2. Determination of Well Depth and Water Level Elevation

Prior to well evacuation or sample collection, ground water elevation will be determined using an electronic water level meter. The water level is measured by slowly lowering the instrument probe into the well. When the probe reaches the water surface, the circuit is completed and a buzzer is activated. The distance from the top of the well casing to the water level is then measured and recorded. The wire on the water level indicator is calibrated in increments of 0.05 feet. Following each use, the instrument is decontaminated as described in Section IV.

The total depth of all monitoring wells will be measured prior to initiating well evacuation. The well depth is determined by slowly lowering a heavy weight attached to tape measure into the well. When the bottom of the well is encountered, the line is raised slightly and slowly lowered until the weight is resting on the bottom of the well and the tape remains taut. The length of the weight is then added to the tape. The weight and tape measure were cleaned and also decontaminated between wells.

TABLE 3

QUARTERLY POST-CLOSURE MONITORING PARAMETERS

<u>Inorganic Parameters</u>	<u>Volatiles</u>	<u>Base/Neutrals</u>	<u>Acid/Phenolics</u>
Water Level	Bromodichloromethane	Isophorone	Phenol
pH	Bromoform		
Specific Conductance	Bromomethane		
Chloride	Carbon tetrachloride		
Nitrate	Chlorobenzene		
Sulfate	Chloroethane		
	2-Chloroethylvinyl ether		
	Chloroform		
	Chloromethane		
	Dibromochloromethane		
	1,2-Dichlorobenzene		
	1,3-Dichlorobenzene		
	1,4-Dichlorobenzene		
	Dichlorodifluoromethane		
	1,1-Dichloroethane		
	1,2-Dichloroethane		
	1,1-Dichloroethene		
	trans-1,2-Dichloroethene		
	1,2-Dichloropropane		
	cis-1,3-Dichloropropene		
	trans-1,3-Dichloropropene		
	Methylene chloride		
	1,1,2,2-Tetrachloroethane		
	1,1,1-Trichloroethane		
	1,1,2-Trichloroethane		
	Tetrachloroethene		
	Trichlorofluoromethane		
	Vinyl Chloride		
	Trichloroethene		

Well Evacuation

Each well will be evacuated prior to sample collection to remove any stagnant water from the well, thereby ensuring that the samples collected are representative of the water quality immediately surrounding each well. For the wells that recover quickly, a minimum of four well volumes of water will be evacuated. Specific conductance, pH and temperature will be tested periodically during well evacuation. Wells which can be evacuated to dryness will be sampled as soon as well recovery occurs.

All wells will be evacuated using Teflon bailers attached to polypropylene cord or a stainless steel submersible pump.

The bailer or pump is lowered to just below the ground water surface in order to remove stagnant water at the top of the water column. This insures the removal of all stagnant water above the well screen and replacement of that water by new formation water. When the well has been evacuated of four well volumes, pH, specific conductance, and temperature were measured and recorded. The well evacuation is continued until the indicator parameters stabilized. When the indicator parameters stabilize, the sample will be taken.

Sample Collection

The sample will be poured slowly into precleaned and labeled sample bottles. Preservatives will be added when necessary. The filled bottles will then be securely placed into a cooler and a chain of custody form will be completed.

Field Quality Control

A strict quality control program will be maintained in the

field to insure the sample integrity during sample collection and transfer to the laboratory. In addition, all equipment and instruments will be maintained and calibrated to prevent sample bias and insure that field measurements are accurate. In addition to these field procedures, internal and external quality control samples will be collected and analyzed to insure the validity of the results.

All field equipment and instrumentation will be cleaned prior to use. Field equipment and instrumentation includes; coolers, pH and specific conductivity meter probes, tape measures, weights, and temporary sample containers.

Field equipment and instrumentation which is used on multiple wells, except for evacuation pump and associated drop pipe and suspension cable, will be cleaned according to the following field cleaning procedures:

- a. Flush item thoroughly with phosphate-free laboratory detergent solution.
- b. Rinse item with potable water.
- c. Rinse with isopropanol, allow to air dry.
- d. Rinse item at least two times with deionized water.
- e. Return item to its protective case or wrap in aluminum foil.

Field Quality Control Samples

Quality control samples will consist of duplicates, trip blank for volatiles, and sampler rinsates.

a. Duplicates

Internal quality assurance duplicate samples will be collected at a frequency of one per matrix type or one for each ten samples of each matrix type sent to the laboratory, whichever, is greater.

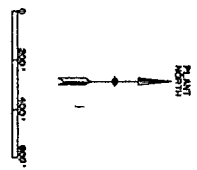
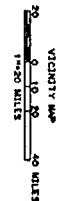
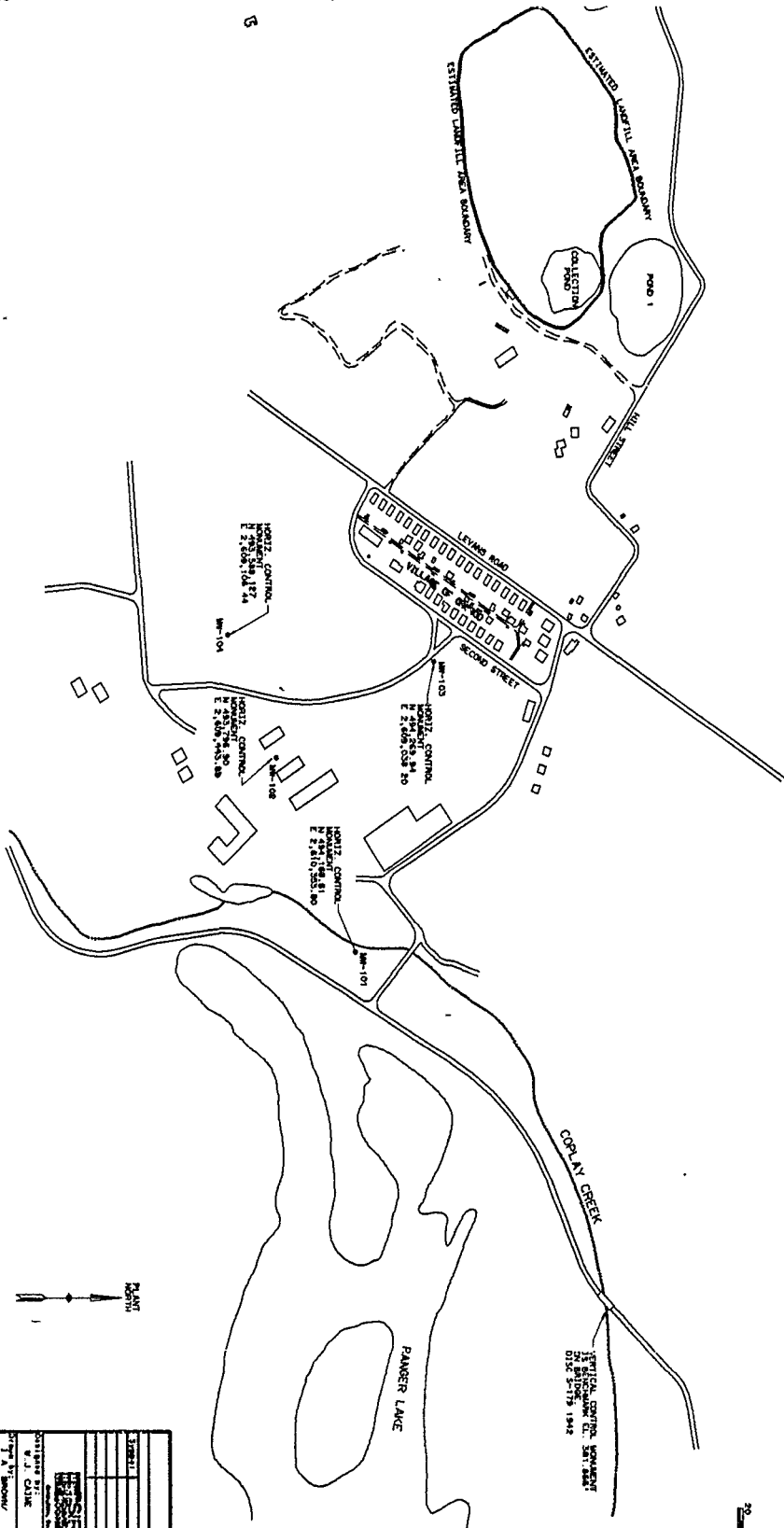
b. Trip Blanks

Trip blanks, containers filled with deionized water and which travel to and from the site with the field samples, are analyzed to determine if the storage or handling of the field samples have jeopardized their integrity and will be collected at a rate of 1 sample per day and analyzed for volatiles only.

c. Sampler Rinsate

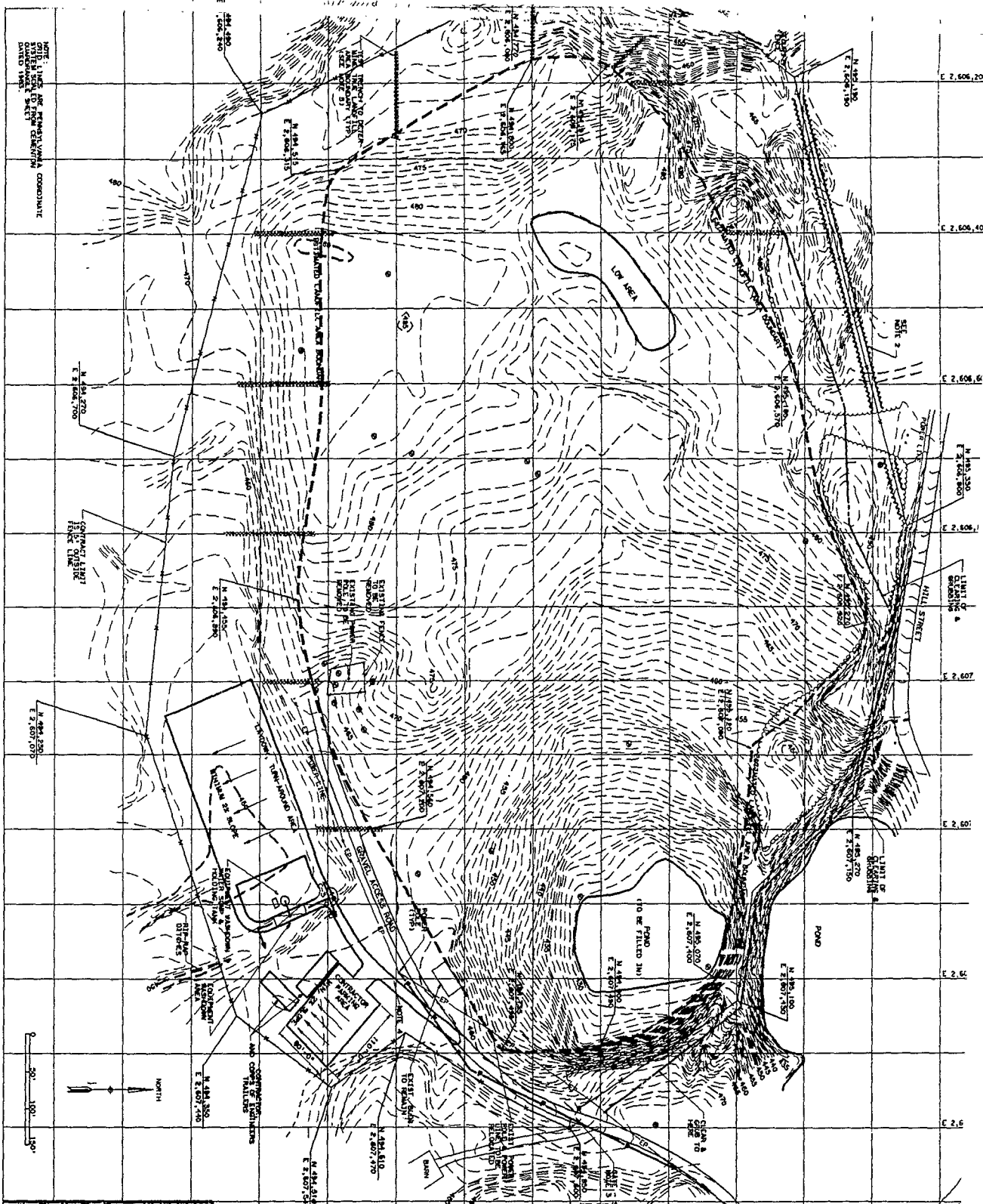
Sample rinsate samples will be collected periodically during sampling. These samples are collected following the cleaning of a bailer by pouring deionized water over and inside the bailer. A portion of this water is collected and tested to verify the adequacy of the field cleaning procedures.

HELEVA LANDFILL SUPERFUND SITE
HAZARDOUS WASTE CONTAINMENT
LEHIGH COUNTY, PENNSYLVANIA



HELEVA LANDFILL SUPERFUND SITE		HAZARDOUS WASTE CONTAINMENT	
U.S. ARMY DISTRICT OFFICE		LEHIGH COUNTY, PENNSYLVANIA	
Project No. 101		Scale: GRAPHIC	
Drawing No. C-2		Date: 10/1/80	
Author: E. L. HARRIS		Checked by: E. L. HARRIS	
Reviewed by: E. L. HARRIS		Approved by: E. L. HARRIS	
Drawing Title: HAZARDOUS WASTE CONTAINMENT LOCATION PLAN		Drawing Code: C-2	

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NOTE:

1. CONTRACT LIMIT IS 5' OUTSIDE OF FENCE LINE.
2. CLEAR & GRUB TO EACH SIDE OF FENCE.
3. FENCE TO BE 10' HIGH AND 10' WIDE.
4. SEE EXIST. SECTION OF FENCE TO BE REMOVED.
5. EXISTING FENCE WILL BE REMOVED TO EXISTING FENCE LINE BY CONTRACTOR.
6. CONTRACTOR SHALL INSTALL TWO (2) 10' HIGH AND 10' WIDE FENCES TO EXISTING FENCE LINE.

LEGEND

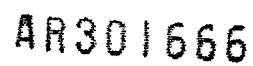
● EXISTING FENCE (TO BE CLOSED)
● MONITORING WELL LOCATION (NOT TO BE CLOSED)

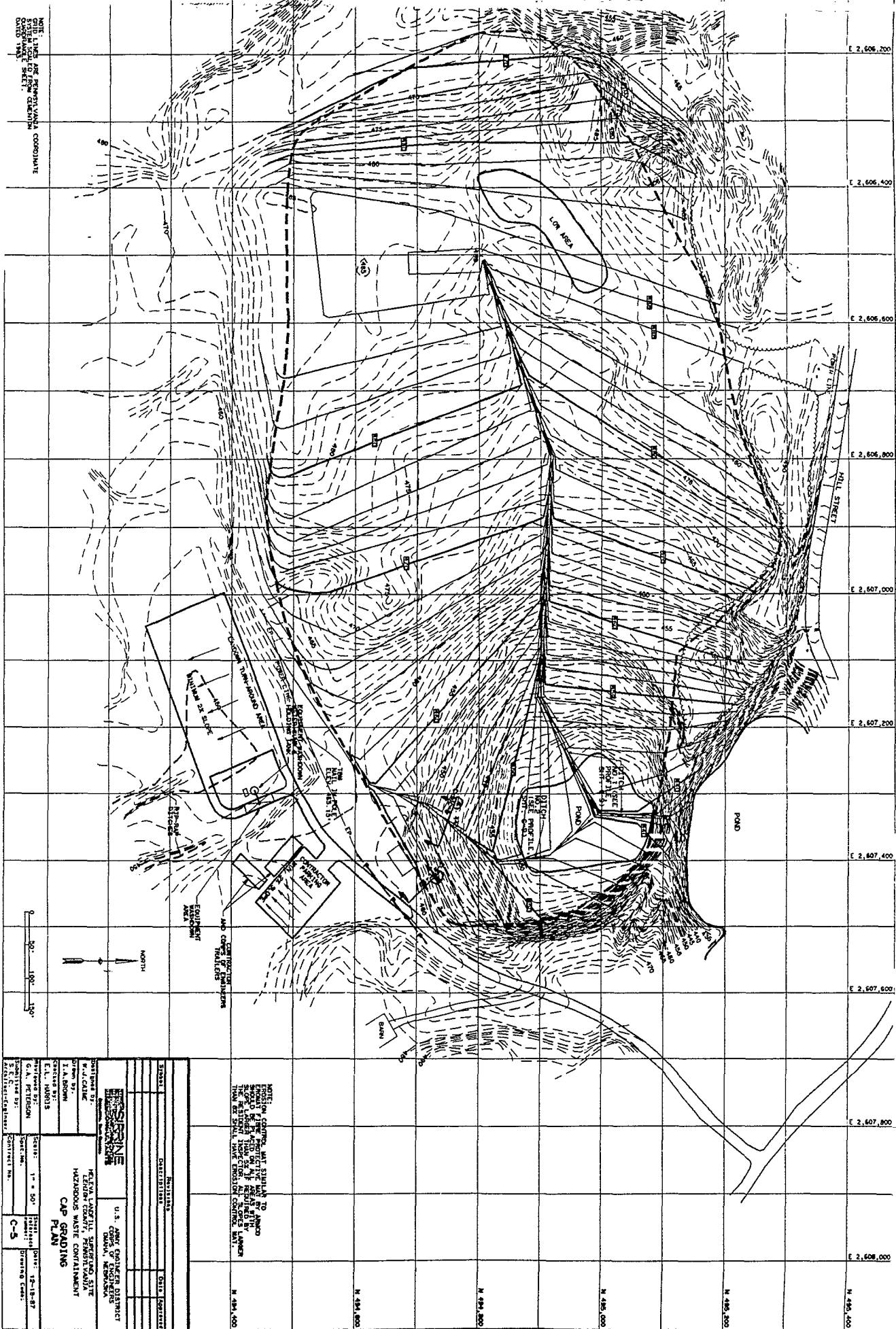
Station	Description	Notes
1+00	EXISTING FENCE	
1+10	EXISTING FENCE	
1+20	EXISTING FENCE	
1+30	EXISTING FENCE	
1+40	EXISTING FENCE	
1+50	EXISTING FENCE	
1+60	EXISTING FENCE	
1+70	EXISTING FENCE	
1+80	EXISTING FENCE	
1+90	EXISTING FENCE	
2+00	EXISTING FENCE	
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9+80	EXISTING FENCE	
9+90	EXISTING FENCE	
10+00	EXISTING FENCE	

U.S. ARMY CORPUS OF ENGINEERS
HAZARDOUS WASTE CONTAINMENT
SITE LAYOUT

DESIGNED BY: J. J. CHINE
 DRAWN BY: J. A. BROWN
 CHECKED BY: J. L. HARRIS
 DATE: 11-1-80
 SCALE: 1" = 50'
 SHEET: 1 OF 1
 PROJECT: 100-100-100
 CONTRACT NO.: C-3

AR301665

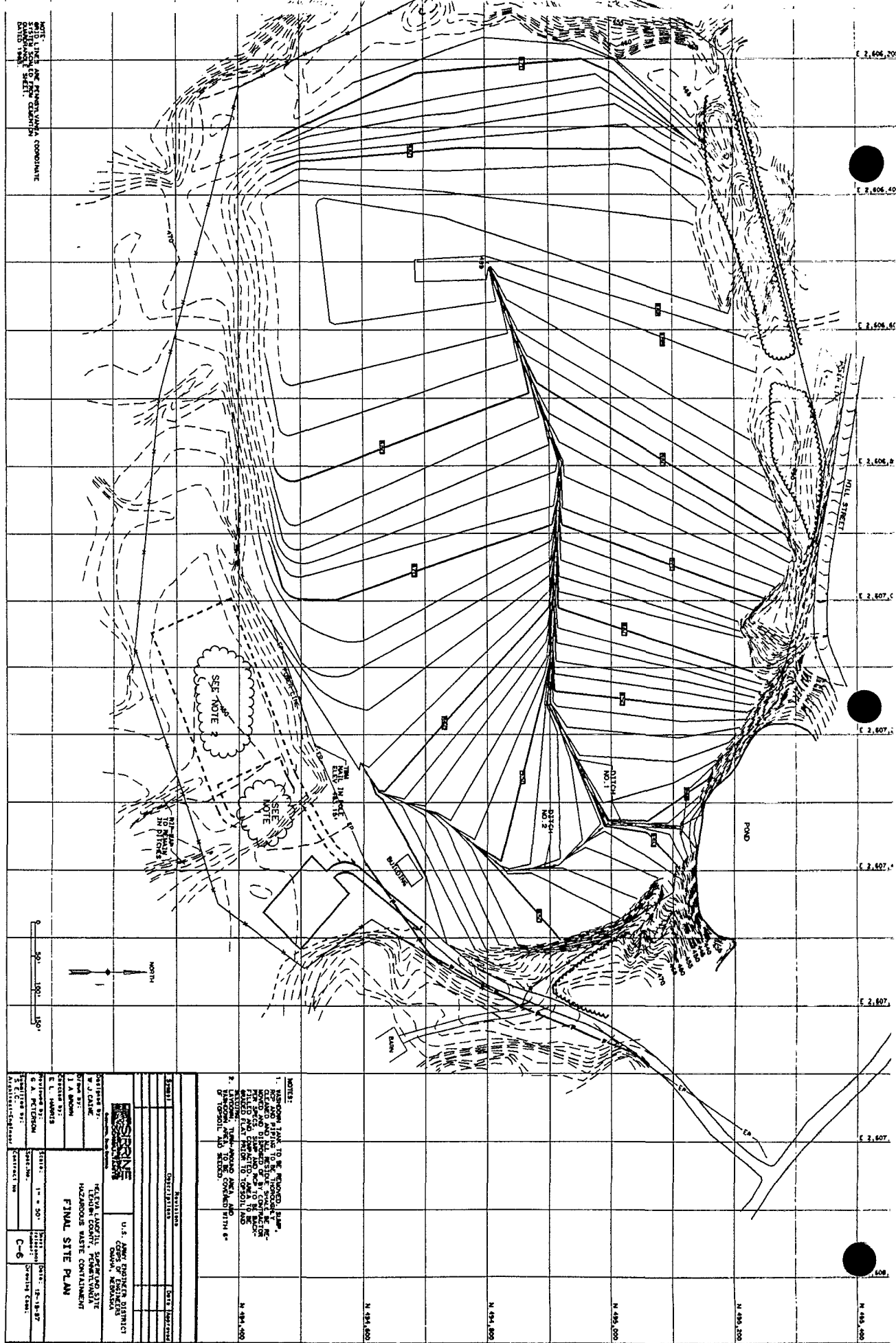




ENGINEERING U.S. ARMY CORPS OF ENGINEERS DISTRICT OFFICE DAKOTA, NEBRASKA	
DESIGNED BY: W.J. CLARK CHECKED BY: E.L. HARRIS	DRAWN BY: G.A. PETERSON SCALE: 1" = 50' DATE: 7-18-87 SHEET NO.: C-5
PROJECT: HAZARDOUS WASTE CONTAINMENT CAP GRADING PLAN	

NOTE: EMISSION CONTROL, NOT SUBJECT TO LANDFILL SITE SPECIFICATIONS. THE EMISSION CONTROL AREA IS NOT TO BE USED FOR ANY OTHER PURPOSES. THE EMISSION CONTROL AREA IS NOT TO BE USED FOR ANY OTHER PURPOSES. THE EMISSION CONTROL AREA IS NOT TO BE USED FOR ANY OTHER PURPOSES.

AR301667



AR301668



VIII. POST-CLOSURE COST ESTIMATE

The post-closure cost estimate is the sum of all maintenance and monitoring expenses anticipated over the length of the 30-year post-closure period. These costs are presented below. If the post-closure plan is modified prior to the completion of closure, the post-closure cost estimate will be revised within 30 days of the modification.

A. Post-Closure Maintenance Cost Estimate

1. Routine Inspection - conducted quarterly during assessment monitoring.

\$200/yr x 30 yr = \$ 6,000

2. Maintenance of Capping System
Estimate that 60% of capping system above the impermeable liner will require repairing over the 30 yr closure period.

Estimate 2%/yr.

(Costing information is from Final Design Cost Estimate in Appendix C modified to reflect greater costs due to smaller size project)

808,000 s.f. x 2%/yr = 16,160 s.f./yr

Unit cost of top capping system above impermeable liner

6" topsoil layer	\$0.62/s.f.
filter fabric	\$0.17/s.f.
12" sand layer	\$1.26/s.f.
erosion control mat	\$0.09/s.f.
grassing	\$0.03/s.f.

Unit cost \$2.17/s.f.

Repair cost/year

16,160 s.f. x \$2.17/s.f. = \$35,055/yr

Mobilization cost/yr = \$ 3,000/yr

\$38,055/yr x 30 yr = \$1,141,650

3. Maintenance of gas venting system (repair of seal with HDPE liner)

- 60% of vents x 234 total vents = 140 vents
 140 vents x \$250/vent (over 30 year period) = \$ 35,000
4. Maintenance of Fence, Wells, Locks
 Estimated average cost of \$300/year
 over the length of the post-closure period \$ 9,000
5. Surveying Final Cover for Settlement
 Following closure the final cover will
 be surveyed during years 1, 5, 10, 15, 20,
 25, and 30
 7 surveys x \$1,500/survey = \$ 10,500
6. Contingency for Replacement or Repair
 of Sections of Final Cover
 Provide Allowance of \$100,000
 over the 30-year period \$ 100,000
7. Landscaping (including cutting grass and
 tree removal)
 20 acres x \$10/acre x 1 time/year x 30 years = \$ 6,000

Maintenance Subtotal = \$1,308,150

B. Post-Closure Monitoring Cost Estimate

The estimate below provides a summary of the anticipated costs for the post-closure monitoring program. This program consist of quarterly monitoring of the parameters listed in Table 3 and annual Appendix IX analyses for MW-2B and MW-11B. The cost for this program are summarized below.

1. Analytical Costs

- A. Quarterly monitoring of 11 wells for
 - Table 3 parameters

\$645/sample x 11 wells x 4 quarters/
 year x 30 years = \$ 815,400

- B. Annual monitoring of 2 wells for Appendix
 IX parameters

\$3,000/sample x 2 wells x 30 years = \$ 180,000

2. Sampling Costs

Assumes 2 person sampling team for 2 days
per quarter

\$500/day x 2 days x 4 quarters/year x
30 years = \$ 120,000

3. Management and Reporting

Assumes quarterly and annual reports and
management of sampling program

\$1,000/quarter x 4 quarters/year x
30 years = \$ 120,000

\$2,500/year x 30 years = \$ 75,000

Post-Closure Monitoring Subtotal = \$1,310,400

C. Total Post-Closure Cost Estimate

The total cost estimated for post-closure consists of the cumulative
estimated costs for post-closure maintenance and post-closure
monitoring.

A. Post-Closure Maintenance Cost Estimate	\$1,308,150
B. Post-Closure Monitoring Cost Estimate	<u>\$1,310,400</u>
C. Total Post-Closure Cost Estimate (A + B) =	\$2,618,550

IX. FINANCIAL ASSURANCE FOR CLOSURE AND POST-CLOSURE

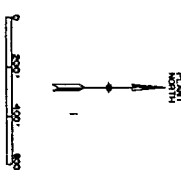
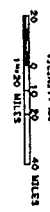
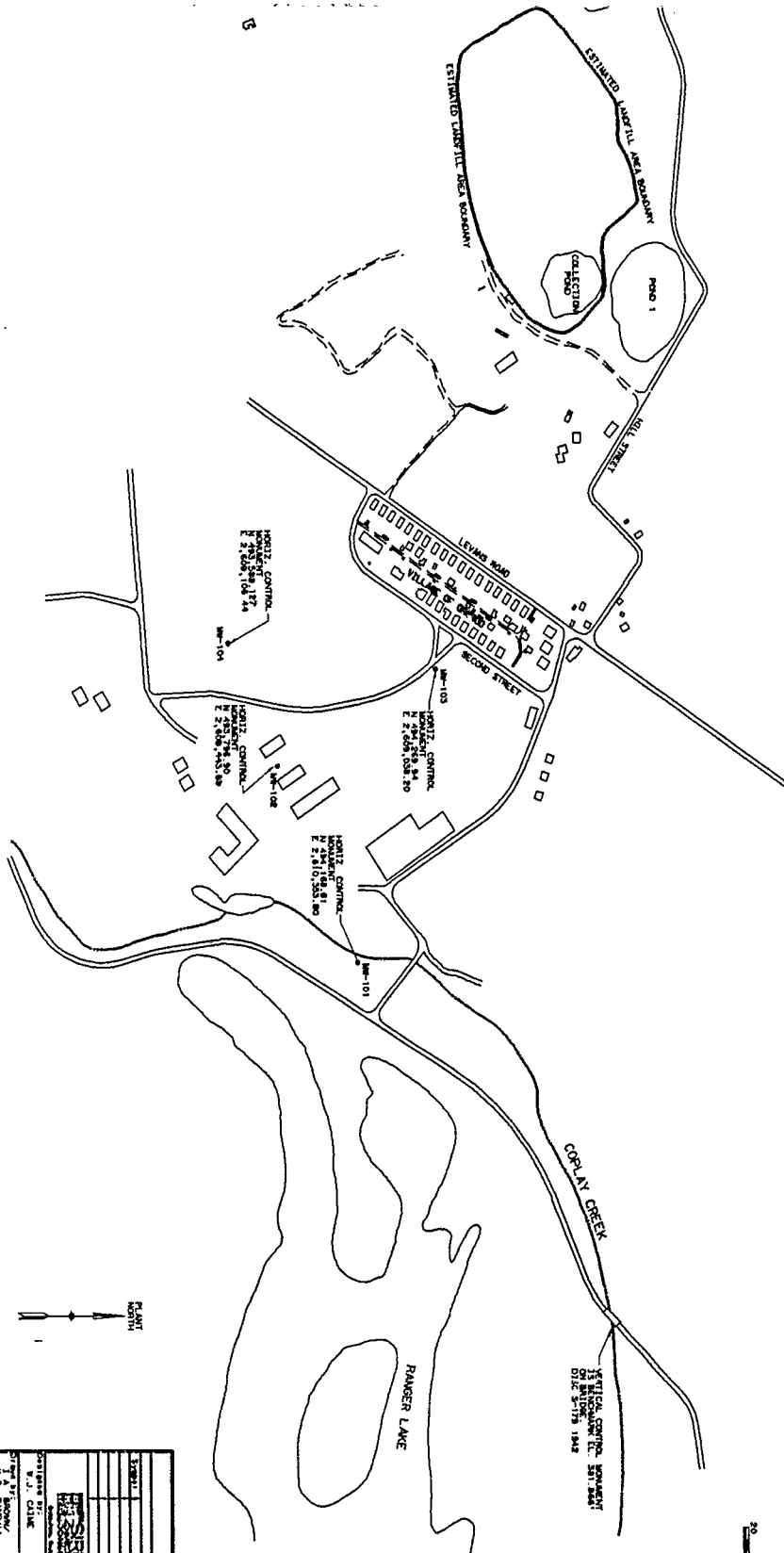
The financial assurance for closure and post-closure will be provided by the Environmental Protection Agency Region III.

APPENDIX A

LANDFILL CLOSURE DRAWINGS

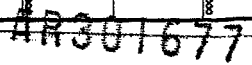
AR301675

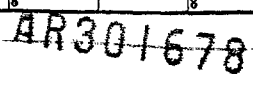
HELEVA LANDFILL SUPERFUND SITE
HAZARDOUS WASTE CONTAINMENT
LEHIGH COUNTY, PENNSYLVANIA

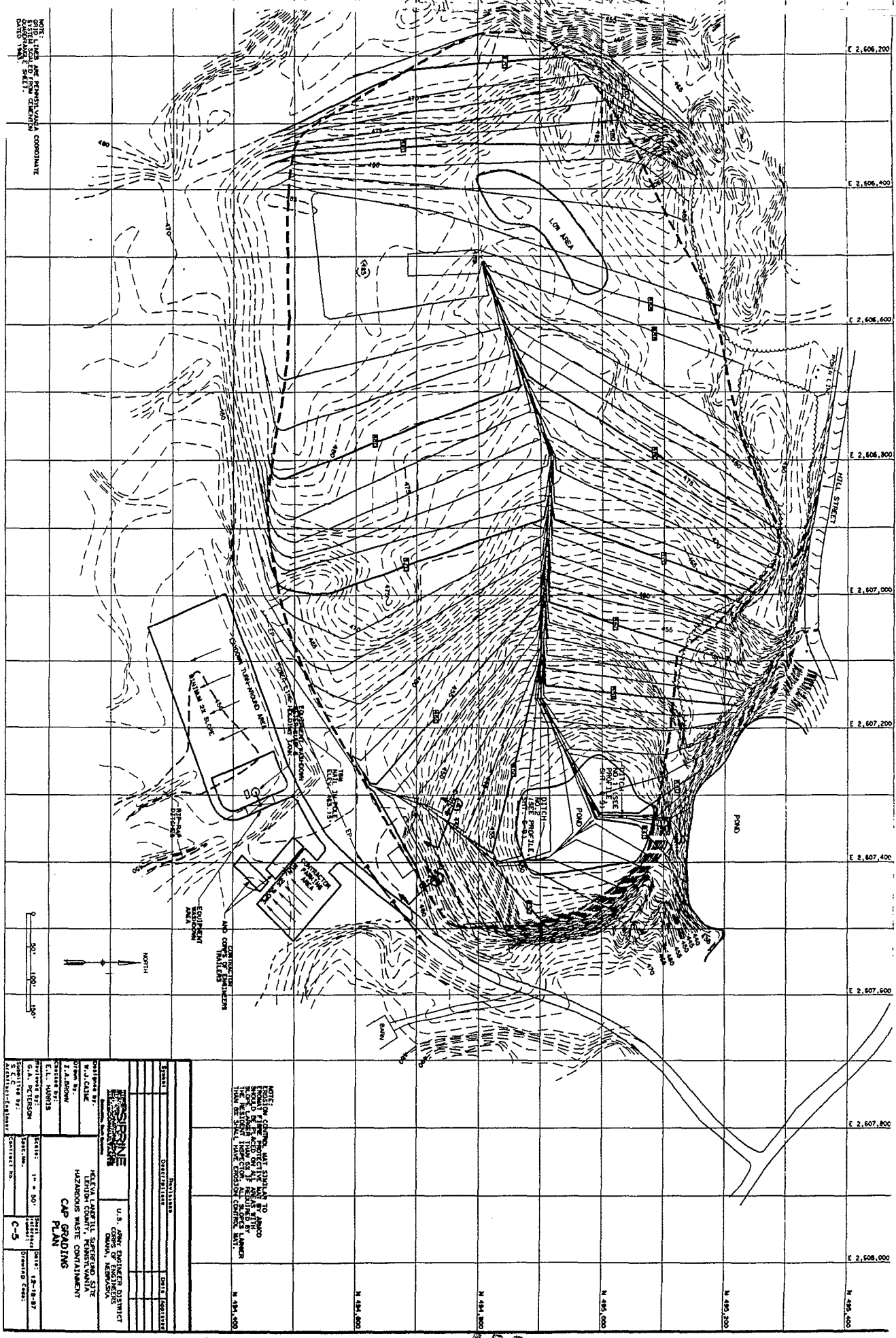


HAZARDOUS WASTE CONTAINMENT LOCATION PLAN U.S. ARMY DISTRICT LEHIGH COUNTY PENNSYLVANIA	
DRAWN BY: E. L. HARRIS	CHECKED BY: R. J. CLINE
DATE: 10/1/80	SCALE: 1" = 100'
PROJECT NO.: C-2	DRAWING NO.: 101

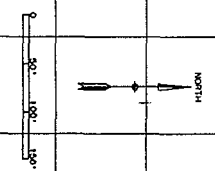
AR301676







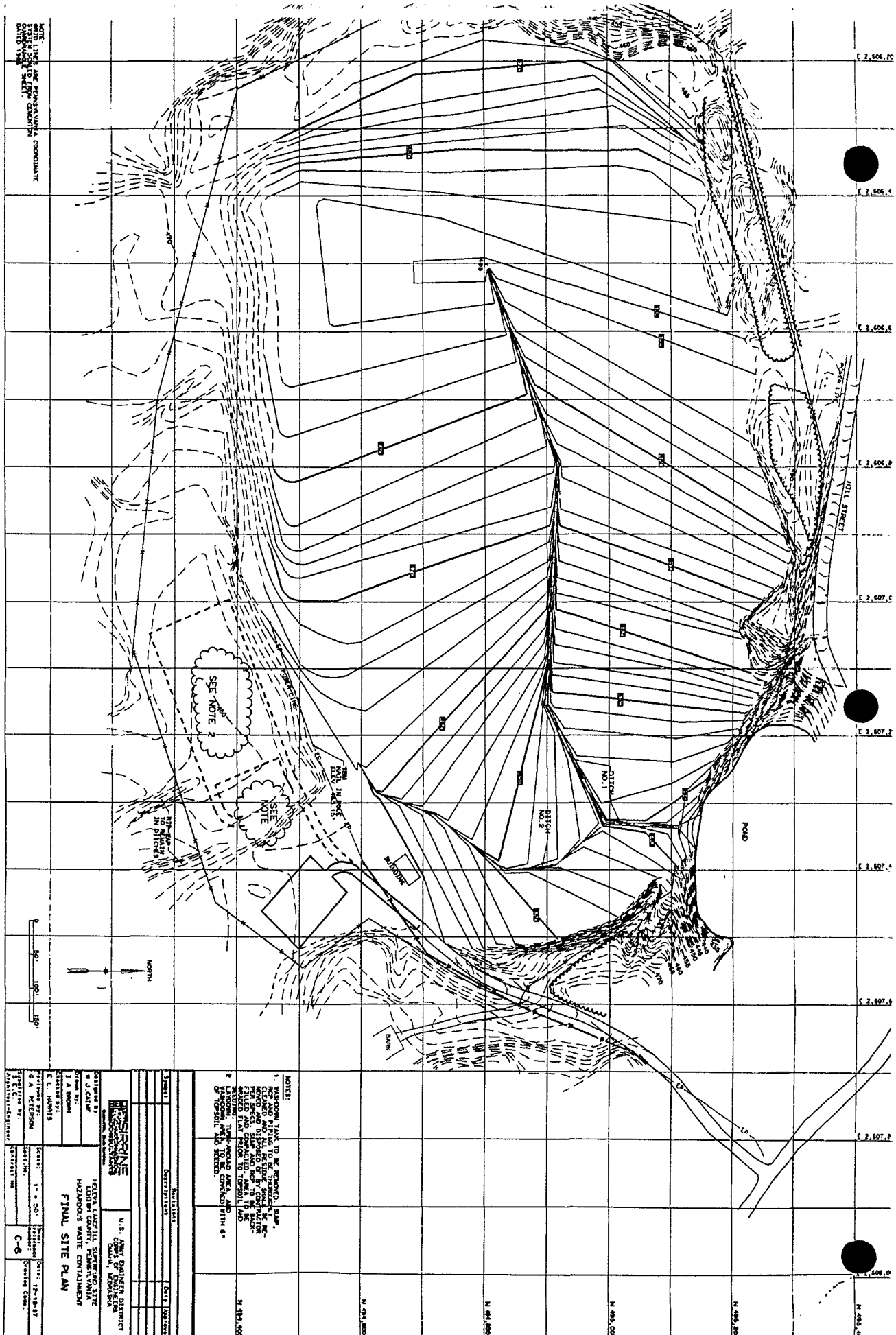
NOTE: THESE ARE PRELIMINARY COORDINATE
GRID VALUES FOR THE
GENERAL AREA ONLY.
COORDINATE VALUES
GIVEN HERE.



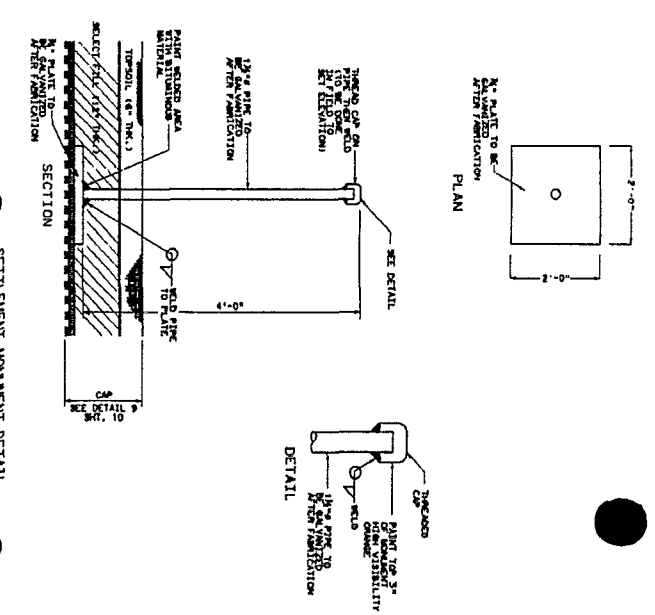
NOTE: COORDINATE VALUES GIVEN TO
GENERAL AREA ONLY. THESE VALUES
SHOULD BE USED ONLY TO LOCATE
THE GENERAL AREA. FOR MORE
PRECISE COORDINATE VALUES,
SEE THE COORDINATE VALUES
GIVEN TO THE USER.

ENGINEERING U.S. ARMY ENGINEER DISTRICT CORPS OF ENGINEERS FORT MONROE, VIRGINIA HAZARDOUS WASTE CONTAINMENT PLAN	
DRAWN BY: E.L. MORRIS	CHECKED BY: W.J. CLARK
DESIGNED BY: J.A. BROWN	APPROVED BY: G.A. PETERSON
SCALE: 1" = 50' SHEET NO.: CONTRACT NO.:	DATE: 12-18-82 DRAWN BY:

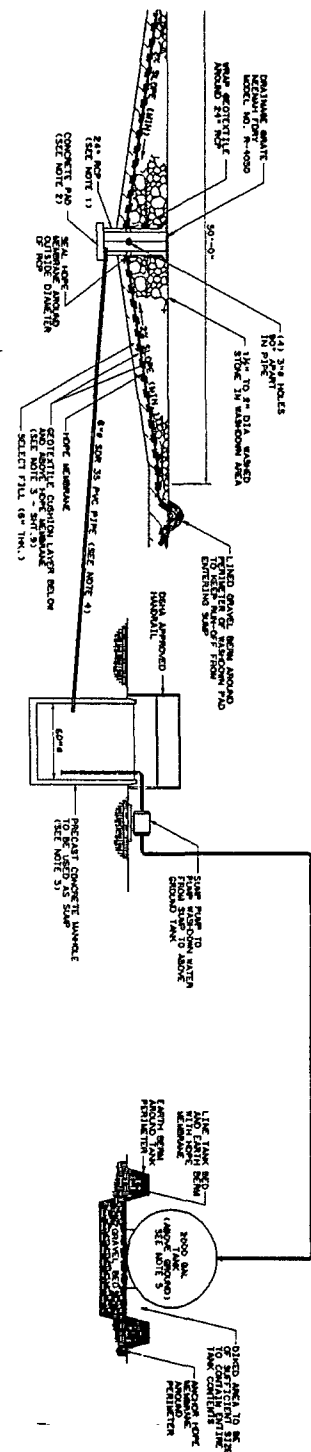
AR301679



AR301680



SETTLEMENT MONUMENT DETAIL



EQUIPMENT WASHDOWN AREA DETAILS

<div style="display: flex; justify-content: space-between;"> <div> <p>1. NAME</p> <p>2. ADDRESS</p> <p>3. CITY</p> <p>4. STATE</p> <p>5. ZIP</p> </div> <div> <p>6. PHONE</p> <p>7. FAX</p> <p>8. TELETYPE</p> <p>9. CABLE</p> <p>10. RADIO</p> <p>11. TELEVISION</p> <p>12. OTHER</p> </div> </div>		<p>13. DATE</p> <p>14. TIME</p> <p>15. BY</p> <p>16. FOR</p> <p>17. TO</p> <p>18. FROM</p> <p>19. BY</p> <p>20. FOR</p> <p>21. TO</p> <p>22. FROM</p> <p>23. BY</p> <p>24. FOR</p> <p>25. TO</p> <p>26. FROM</p> <p>27. BY</p> <p>28. FOR</p> <p>29. TO</p> <p>30. FROM</p> <p>31. BY</p> <p>32. FOR</p> <p>33. TO</p> <p>34. FROM</p> <p>35. BY</p> <p>36. FOR</p> <p>37. TO</p> <p>38. FROM</p> <p>39. BY</p> <p>40. FOR</p> <p>41. TO</p> <p>42. FROM</p> <p>43. BY</p> <p>44. FOR</p> <p>45. TO</p> <p>46. FROM</p> <p>47. BY</p> <p>48. FOR</p> <p>49. TO</p> <p>50. FROM</p> <p>51. BY</p> <p>52. FOR</p> <p>53. TO</p> <p>54. FROM</p> <p>55. BY</p> <p>56. FOR</p> <p>57. TO</p> <p>58. FROM</p> <p>59. BY</p> <p>60. 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1. REINFORCED CONCRETE PIPE SHALL BE CAST IN PLACE.
2. CONCRETE SHALL BE TYPE AND SHALL BE PLACED AT COMPRESSION STRENGTH OF 3,000 PSI.
3. REINFORCED CONCRETE PIPE SHALL BE FILLED WITH PORTLAND CEMENT MORTAR OR WITH MORTAR.
4. JOINTS SHALL BE GASKETED AND DITCHED WITH A 1/2" DITCH ON EACH SIDE OF JOINTS.
5. ABOUT 2000 LBS. MUST BE SET ON EACH JOINT FOR 24 HOURS BEFORE PLACING ON OTHER JOINTS.

APPENDIX B

LANDFILL CLOSURE SPECIFICATIONS

AR301683

HELEVA LANDFILL SITE
LEHIGH COUNTY, PENNSYLVANIA
TECHNICAL SPECIFICATIONS

AR301684

HELEVA LANDFILL SITE
INDEX OF TECHNICAL SPECIFICATIONS

<u>Specification Section</u>	<u>Specification Title</u>
01010	Summary of Work
01025	Control of Work
01030	Warranty of Construction
01035	Special Project Procedures
01036	Special Provisions
01038	Pre-Construction and Pre-Work Conference
01050	Progress Meetings and Reports
01100	Special Clauses
01200	Project Schedules
01300	Environmental Protection
01340	Submittals
01400	Special Safety Requirements
01510	Temporary Site Utilities
01550	Spill Control
01590	Temporary Support Zone Facilities
01700	Contract Closeout
01800	Field Engineering
01950	Project Record Documents
02040	Dust Control
02100	Site Clearing
02150	Erosion and Runoff Control
02201	Excavation, Filling, and Backfilling
02241	Stabilized - Aggregate Base Course
02444	Chain Link Security Fence and Gate
02485	Turf
13450	High Density Polyethylene Membrane
13460	Well Abandonment
13470	Gas Venting System

AR301685

BIDDING SCHEDULE

<u>ITEM NO.</u>	<u>DESCRIPTION</u>	<u>QUANTITY</u>	<u>UNIT</u>	<u>UNIT PRICE</u>	<u>AMOUNT</u>
1.	Entire Work complete for Landfill Closure excluding Item Nos. 2 through 15 specified below.	Job	L.S.	****	\$_____
2.	On-Site Personnel Requirements	180	Day	\$_____	\$_____
3.	Drum Removal and Disposal				
	a. First 30 drums	30	Ea.	\$_____	\$_____
	b. Over 30 drums	10	Ea.	\$_____	\$_____
4.	Removal and Disposal of On-Site Pond Water				
	a. First 1,885,000 gal.	1,885,000	Gal.	\$_____	\$_____
	b. Over 1,885,000 gal.	40,000	Gal.	\$_____	\$_____
5.	Close 19 On-Site Wells (price per foot belowgrade)				
	a. First 1700 FT	1700	FT	\$_____	\$_____
	b. Over 1700 FT	100	FT	\$_____	\$_____
6.	Excavate and Backfill Test Trenches				
	a. First 200 CY	200	CY	\$_____	\$_____
	b. Over 200 CY	50	CY	\$_____	\$_____
7.	Common Fill: Furnish and install common fill including all appurtenant work.				
	a. First 81,400 CY	81,400	CY	\$_____	\$_____
	b. Over 81,400 CY	10,000	CY	\$_____	\$_____
8.	Select Fill: Furnish and install select fill including all appurtenant work.				
	a. First 47,200 CY	47,200	CY	\$_____	\$_____
	b. Over 47,200 CY	10,000	CY	\$_____	\$_____
9.	Cushion Fabric: Furnish and install geotextile cushion fabric including all appurtenant work.				
	a. First 864,600 SF	864,600	SF	\$_____	\$_____
	b. Over 864,600 SF	50,000	SF	\$_____	\$_____

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<u>ITEM NO.</u>	<u>DESCRIPTION</u>	<u>QUANTITY</u>	<u>UNIT</u>	<u>UNIT PRICE</u>	<u>AMOUNT</u>
10.	HDPE Membrane: Furnish and install 60 mil HDPE Membrane per specifications.				
	a. First 864,600 SF	864,600	SF	\$ _____	\$ _____
	b. Over 864,600 SF	50,000	SF	\$ _____	\$ _____
11.	Drainage Net: Furnish and install Drainage Net and all appurtenant work.				
	a. First 864,600 SF	864,600	SF	\$ _____	\$ _____
	b. Over 864,600 SF	50,000	SF	\$ _____	\$ _____
12.	Filter Fabric: Furnish and install geotextile filter fabric all appurtenant work.				
	a. First 864,600 SF	864,600	SF	\$ _____	\$ _____
	b. Over 864,600 SF	50,000	SF	\$ _____	\$ _____
13.	Topsoil: Furnish and install topsoil per specifications				
	a. First 16,500 CY	16,500	CY	\$ _____	\$ _____
	b. Over 16,500 CY	1,000	CY	\$ _____	\$ _____
14.	Seeding: Furnish and install area seeding per specifications				
	a. First 125,400 SY	125,400	SY	\$ _____	\$ _____
	b. Over 125,400 SY	5,600	SY	\$ _____	\$ _____
15.	Gas Vents: Furnish and install gas vents including borings, gravel pack, and all other appurtenant materials and work.	234	Ea.	\$ _____	\$ _____

TOTAL BID AMOUNT
(Items 1 thru 15) \$ _____

NOTES:

1. Quantities for Item Nos. 2 through 15 are estimated only. The respective unit price will prevail in the event of an overrun or underrun subject to CONTRACT CLAUSES Clause "Variation in Estimated Quantity" for Bid

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Item Nos. 2 and 15; and SECTION: SPECIAL CLAUSES Clause "Variations in Estimated Quantities - Subdivided Items" for Items 3 through 14.

2. Bid Prices must be entered for all items in the Bid Schedule. Total amount bids submitted without bid prices being entered on individual items will be rejected. Extensions will be subject to verification by the Government. In case of variation between the unit price and the extension, the unit price will be considered the bid. In case of variation between the individual bid item prices and the Total Amount, the individual bid prices will be considered the bid.

3. A modification to a bid which provides for a single adjustment to the total amount bid, should state the application of the price adjustment to each respective lump sum price and unit price affected. If the modification is not so apportioned, the single adjustment will be applied on a prorata basis to Items 1 through 15 on the Bidding Schedule.

4. Each unit price shall include furnishing all labor, materials, and equipment required to provide, construct, and install each item complete and in accordance with the drawings and specifications.

5. The Bid shall state what the makeup shall be for the topsoil furnished for the landfill site.

6. See SECTION: MEASUREMENT AND PAYMENT.

END

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SECTION 01010

SUMMARY OF WORK

PART 1 - GENERAL

1. LOCATION OF WORK

1.1 The work of this Contract involves the Heleva Landfill site located near Allentown, Pennsylvania. The site is located in Lehigh County near the Village of Ormrod.

2. WORK TO BE DONE. Furnish all materials, labor and equipment to perform the following :

2.1 Establishment of the operations and staging area including the decontamination facility.

2.2 Secure site perimeter by installation of chain link fence.

2.3 Disposal on site of several drums previously abandoned on-site. Disposal of the collection pond water prior to fill being placed in this area.

2.4 Closing of 19 monitoring wells located on the landfill.

2.5 Construction of test trenches to determine the true landfill boundary.

2.6 Relocation of the existing power pole as shown on the drawings.

2.7 Grading of the existing landfill with importation of fill material where required to establish the contours shown on the Regrading Site Plan.

2.8 Removal and disposal of existing utility pole, fencing and other items specified on the drawings.

2.9 Furnishing and installing a minimum 6-inch thick layer of select fill as a subbase for the synthetic membrane composite cap over the entire surface of the landfill.

2.10 Furnishing and installing the filter fabric, drainage net, HDPE liner, geotextile cushion fabric composite cap.

2.11 Fabrication and installation of 3 settlement markers.

2.12 Construction of drainage ditches to collect and transport surface drainage from the cap as shown on the drawings.

2.13 Furnishing and installing a minimum of 6 inches of topsoil over a minimum of 12 inches of select fill to cover the landfill composite cap.

2.14 Seeding and revegetating the landfill soil cover surface including the placement of an erosion control mat as indicated on the drawings.

2.15 Removal of the washdown facility, Placement of a minimum 6-inch thick layer of topsoil over the regraded washdown facility area and the laydown turnaround area and all grading and seeding as indicated on the drawings, after cap construction.

2.16 Furnishing and installing gas vents penetrating the synthetic landfill cap to allow for venting of landfill gases.

3. ABBREVIATIONS AND REFERENCES

AASHTO	- American Association of State Highway and Transportation Officials
ABIH	- American Board of Industrial Hygiene
ACGIH	- American Conference of Governmental Industrial Hygienists
AIHA	- American Industrial Hygiene Association
AISC	- American Institute of Steel Construction
AISI	- American Iron and Steel Institute
ANSI	- American National Standards Institute
ASCE	- American Society Civil Engineers
ASME	- American Society of Mechanical Engineers
ASTM	- American Society of Testing Materials
AWPA	- American Wood Preservers Association
AWS	- American Welding Society
AWWA	- American Water Works Association
Fed. Spec.	- Federal Specifications
DIPRA	- Ductile Iron Pipe Research Association
IEEE	- Institute of Electrical and Electronic Engineers
NCPI	- National Clay Pipe Institute
NEMA	- National Electrical Manufacturers Association
NFPA	- National Fire Protection Association
NIOSH	- National Institute for Occupational Safety and Health
OSHA	- Occupational Safety and Health Administration

Where reference is made to a specification by one of the above-mentioned or other associations, the latest issue including revisions shall apply.

END -

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SECTION 01025

CONTROL OF WORK

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| 1. PLANT | 6. WATER FOR CONSTRUCTION PURPOSES |
| 2. PRIVATE LAND | 7. MAINTENANCE OF FLOW |
| 3. OPEN EXCAVATIONS | 8. COOPERATION WITHIN THIS CONTRACT |
| 4. CARE AND PROTECTION OF PROPERTY | 9. CLEANUP |
| 5. PROTECTION AND RELOCATION OF EXISTING STRUCTURES AND UTILITIES | 10. SEQUENCE OF CONSTRUCTION |

1. PLANT

1.1 Furnish plant and equipment which will be efficient, appropriate and large enough to secure a satisfactory quality of work and a rate of progress which will insure the completion of the work within the project schedule. If at any time such plant appears to the Contracting Officer to be inefficient, inappropriate or insufficient for securing the quality of work required or for producing the rate of progress aforesaid, he may order the Contractor to increase the efficiency, change the character or increase the plant equipment, and the Contractor shall conform to such order. Failure of the Contracting Officer to give such order shall in no way relieve the Contractor of his obligations to secure the quality of the work and rate of progress required.

2. PRIVATE LAND

2.1 The Contractor shall not enter or occupy private land outside of easements, except by written permission of the property owner.

3. OPEN EXCAVATIONS

3.1 All open excavations shall be adequately safeguarded by providing temporary barricades, caution signs, lights and other means to prevent accidents to persons, and damage to property. The Contractor shall, at his own expense provide suitable and safe bridges and other crossings for accommodating travel by vehicles and workmen. Bridges provided for access during construction shall be removed when no longer required. The length or size of excavation will be controlled by the particular surrounding conditions, but shall always be confined to the limits prescribed by the Contracting Officer. If the excavation becomes a hazard, the Contracting Officer may require special construction procedures such as limiting the length of the open trench and requiring that the trench shall not remain open overnight.

3.2 The Contractor shall take precautions to prevent injury to the public due to open trenches. All trenches, excavated material, equipment, or other obstacles which could be dangerous to the public shall be well

lighted at night.

3.3 As required by OSHA regulations (29 CFR 1926-652) trenches or excavations with banks more than 5 feet high shall be shored, laid back to a stable slope or equivalent.

3.4 All excavation in roadways shall conform to all applicable local laws.

4. CARE AND PROTECTION OF PROPERTY

4.1 The Contractor shall be responsible for the preservation of all public and private property, and shall use every precaution necessary to prevent damage thereto. If any direct or indirect damage is done to public or private property by or on account of any act, omission, neglect, or misconduct in the execution of the work on the part of the Contractor, such property shall be restored by the Contractor, at his expense, to a condition similar or equal to that existing before the damage was done, or he shall make good the damage in other manner acceptable to the Contracting Officer.

5. PROTECTION AND RELOCATION OF EXISTING STRUCTURES AND UTILITIES

5.1 The Contractor shall assume full responsibility for the protection of all buildings, structures, and utilities, public or private, including poles, signs, services to buildings, utilities in the street, gas pipes, water pipes, hydrants, sewers, drains, and electric and telephone cables, that are shown on the Drawings, readily visible on the site, or indicated by the Contracting Officer to exist. The Contractor shall carefully support and protect all such structures and utilities from injury of any kind. Any damage resulting from the Contractor's operations shall be repaired by him at his expense.

5.2 Assistance will be given the Contractor in determining the location of existing services. The Contractor, however, shall bear full responsibility for obtaining all locations of underground structures and utilities (including existing water services, drain lines, and sewers). Services to buildings shall be maintained, and all costs or charges resulting from damage thereto shall be paid by the Contractor.

5.3 Protection and temporary removal and replacement of existing utilities and structures as described in this Section shall be a part of the work under the Contract and all costs in connection therewith shall be included in the total price bid.

5.4 If, in the opinion of the Contracting Officer, permanent relocation of a utility is required, he may direct the Contractor, in writing, to perform the work. Work so ordered will be paid for under the "Changed Conditions" clause. If relocation of a privately owned utility is required, the Contractor will notify the Contracting Officer immediately and the Contractor shall have no claim for delay due to such relocation. The Contractor shall notify all utility companies in writing at least 72 hours (excluding Saturdays, Sundays and Legal holidays) before excavating in any public way. Contractor shall also notify Pennsylvania Dig Safe, telephone 1-800-242-1776 at least 72 hours prior to start of work.

6. WATER FOR CONSTRUCTION PURPOSES

6.1 The Contractor shall provide sufficient water for construction and decontamination purposes from off-site sources at his own expense.

7. MAINTENANCE OF FLOW

7.1 The Contractor shall at his own cost, provide for the flow of sewers, drains and water courses interrupted during the progress of the work, and shall immediately cart away and remove all offensive matter. The entire procedure of maintaining existing flow shall be fully discussed with the Contracting Officer well in advance of the interruption of any flow.

8. COOPERATION WITHIN THIS CONTRACT

8.1 All firms or persons authorized to perform any work under this Contract shall cooperate with Contractor and his Subcontractors or trades, and shall assist in incorporating the work of other trades where necessary or required.

9. CLEANUP

9.1 During the course of the work, the Contractor shall keep the site of his operations in as clean and neat a condition as is possible. He shall dispose of all residue resulting from the construction work and, at the conclusion of the work, he shall dispose of as directed by the Contracting Officer any surplus material, broken pavement, lumber, equipment, temporary structures, and any other refuse remaining from the construction operations, and shall leave the entire site of the work in a neat and orderly condition.

10. SEQUENCE OF CONSTRUCTION

10.1 Control of migration of contamination from the landfill site is of prime importance during the construction of the project. To reduce the potential for migration of contamination the following sequence of construction is required.

10.1.1 Complete construction and have operational the Support Zone and Contamination Reduction Zone before any vehicles or workers are allowed into the Exclusion Zone.

10.1.2 Implement complete fencing of exclusion zone; temporary fencing may be used where dictated by erosion control measures as required in SECTION: EROSION AND RUNOFF CONTROL before any grading or excavation in the Exclusion Zone.

10.1.3 Grading and filling in the Exclusion Zone shall not start until a bar type schedule has been completed by the Contractor and approved by the Contracting Officer that insures cold weather will not interrupt the sequence of cap installation from initial start to completion.

10.1.4 Test trenches shall be constructed as directed by the Contracting Officer to determine the true landfill boundary.

10.1.5 Test and determine proper disposal of water in the onsite pond before draining this pond.

END

SECTION 01030

WARRANTY OF CONSTRUCTION1. WARRANTY REQUIREMENTS

1.1 In addition to any other warranties set out elsewhere in this Contract, the Contractor warrants that the work performed under this Contract conforms to the Contract requirements and is free of any defect of equipment, material or design furnished, or workmanship performed by the Contractor or any of his subcontractors or suppliers at any time. Such warranty shall continue for a period of one year from the date of final acceptance of the work, but with respect to any part of the work which the Government takes possession of prior to final acceptance, such warranty shall continue for a period of one year from the date the Government takes possession. Under this warranty, the Contractor shall remedy at his own expense any such failure to conform to contract requirements or any such defect. In addition, the Contractor shall remedy at his own expense any damage to the real or personal property, when that damage is the result of the Contractor's failure to conform to Contract requirements or any such defect of equipment, material, workmanship, or design. The Contractor shall also restore any work damaged in fulfilling the terms of this clause. The Contractor's warranty with respect to work repaired or replaced hereunder shall run for one year from the date of such repair or replacement.

1.2 The Government shall notify the Contractor in writing within a reasonable time after the discovery of any failure, defect, or damage.

1.3 Should the Contractor fail to remedy any failure, defect, or damage described in 1.1 above within reasonable time after receipt of notice thereof, the Government shall have the right to replace, repair, or otherwise remedy such failure, defect, or damage at the Contractor's expense.

1.4 In addition to other rights and remedies provided by this clause, all subcontractor's, manufacturer's and supplier's warranties expressed or implied, respecting any work and materials shall, at the direction of the Government, be enforced by the Contractor for the benefit of the Government. In such case, if the Contractor's warranty under 1.1 above has expired, any suit directed by the Government to enforce a subcontractor's, manufacturer's or supplier's warranty shall be at the expense of the Government. The Contractor shall obtain any warranties which the subcontractors, manufacturers, or suppliers would give in normal commercial practice.

1.5 If directed by the Contracting Officer, the Contractor shall require any such warranties to be executed in writing to the Government.

END

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SECTION 01035

SPECIAL PROJECT PROCEDURES1. GENERAL REQUIREMENTS

1.1 Special Project Procedures are required of the Contractor due to the potentially hazardous nature of the work. The Contractor shall submit the necessary information, as specified herein, to the Contracting Officer for approval.

1.1.1 The Contractor shall implement and maintain these procedures at the appropriate time prior to and during performance of the work.

1.1.2 These special project procedures are described in or relate to the following sections:

Section 01100: Special Clauses
Section 01300: Environmental Protection
Section 01400: Special Safety Requirements
Section 01550: Spill Control
Section 02100: Site Preparation
Section 02150: Erosion and Runoff Control
Section 02201: Excavation, Filling, and Backfilling

1.1.3 The information and criteria presented in these Sections are for guideline purposes and provide the Contractor with the benefit of data accumulated to date. The Contractor is responsible for the content and implementation of all special project procedures.

2. SPECIAL PROJECT PLANS

2.1 The Contractor shall be responsible for the development of the special project procedure plans for submittal to the Contracting Officer within twenty-one (21) calendar days after Notice to Proceed. These Project Procedure Plans (in addition to the Quality Control Plan outlined in Section 01100, "Special Clauses"), once approved and complete with all comments addressed, shall be made a part of the Contract Documents, prior to the Contracting Officer issuing authorization to commence work. The following special project procedure plans are referenced and discussed within the referenced Specification section.

2.1.1 Safety, Health and Emergency Response Plan (SHERP). The Contractor's Safety, Health and Emergency Response Plan shall outline the procedures and contingency actions necessary to address the site work and specifications that include emergency response and contingency measures levels of personnel protection for individuals performing site work activities, medical surveillance, personnel training, and air monitoring requirements. The pertinent specifications for the Safety, Health and Emergency Response Plan include the following:

2.1.1.1 Section 01400: Special Safety Requirements. Delineation of site work and tasks and the appropriate levels of personnel protection,

specifications of personnel training operations, medical surveillance requirements, air monitoring requirements and related health and safety requirements.

2.2 The Spill and Discharge Control Plan shall describe contingency measures for spills and discharges.

2.2.1 Section 01550: Spill Control. Specification for the required contingencies and mitigative actions in the case of liquid and solid spills during the project work.

2.3 The Contractor's Laboratory Service Protocols shall describe the use of the required laboratory facilities to perform the necessary analytical procedures to verify completion of the sitework activities in accordance with the Specifications. The laboratory Service Protocol shall be part of the Contractor Quality Control Plan (CQCP) and shall be approved by the Contracting Officer (CO) (with concurrence of CEMRD-ED-L) prior to authorization to commence work.

2.4 The Contractor's Materials Handling Plan shall outline the procedures and construction sequencing to address the excavation and hauling of soils and materials, the removal of contaminated liquids, rough grading operations, and the on-site staging/storage of clean fill and contaminated soils. The pertinent specifications for the Materials Handling Plan include the following:

2.4.1 Section 02100: Site Preparation. Specification for construction activities to prepare the Support Zone and construct site access roads.

2.4.2 Section 02201: Excavation, Filling, and Backfilling. Specification for construction of surface drainage facilities, landfill grading and capping, and borrow material selection.

2.4.3 Section 01550: Spill Control. Specification for temporary spill emergency plan.

2.5 The Contractor's General Site Work Plan shall outline the overall construction sequencing and procedures to be followed during the remaining site work activities. These activities include the specifications outlined in the following sections:

2.5.1 Section 01200: Project Schedules. Specification for the proposed progress schedules for completion of the site work activities.

2.6 The Soil Erosion and Sediment Control Plan shall describe proposed soil erosion and sediment control activities for the project.

2.6.1 Section 02150: Erosion and Runoff Control. Specification for required erosion and runoff control procedures.

2.7 The Truck Traffic Control Plan shall describe the Contractor's material trucking provisions on off-site roads.

2.7.1 Section 01036: Special Provisions. Paragraph "Material Trucking Provisions".

END

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SECTION 01036

SPECIAL PROVISIONS

1. PROVISIONS FOR CONTROL OF EROSION. Sufficient precautions shall be taken during construction to minimize the run-off of polluting substances such as silt, clay, fuels, oils, bitumens, calcium chloride, or other polluting materials harmful to humans, fish, or other life, into the supplies and surface waters of the State. Special precautions shall be taken in the use of construction equipment to prevent operations which promote erosion.
2. PROVISIONS FOR ON-SITE EQUIPMENT DEDICATION. Equipment used for on-site activities such as trench excavation, post holes, ditches and basin excavation, grading and placement of fill or select fill, as well as demolition, shall be "site dedicated". Such equipment must be thoroughly decontaminated before removal from the site. Trucks and other vehicles hauling uncontaminated material to and through designated clean areas need not be site dedicated. Such equipment will not require decontamination.
3. BURNING. Material shall not be burned on the project site.
4. DUST CONTROL. The Contractor shall maintain all excavations, stockpiles, access roads, waste areas, and all other work areas free from excess dust to such reasonable degree as to avoid causing a hazard or nuisance. Approved temporary methods consisting of sprinkling, chemical treatment, or similar methods will be permitted to control dust. Dust control shall be performed as the work proceeds and whenever a dust nuisance or hazard occurs. See Section 02040 DUST CONTROL for a complete description of dust control requirements.
5. MATERIAL TRUCKING PROVISIONS.
 - 5.1 The Contractor shall submit a Truck Traffic Control Plan which shall specify at a minimum:
 - 5.1.1 truck size
 - 5.1.2 number of trucks hauling per 8 hour day
 - 5.1.3 truck loading/unloading area
 - 5.1.4 proposed truck routes to and from the site
 - 5.1.5 truck hauling time schedule (time of day, length of operation)
 - 5.1.6 maximum truck load
 - 5.2 The Truck Traffic Control Plan shall include the following constraints and provisions:
 - 5.2.1 No local overnight truck parking shall be allowed other than on-site areas specified by the Contracting Officer.
 - 5.2.2 No truck hauling operations shall be allowed at night (i.e. after sunset).

5.2.3 The Contractor shall meet and coordinate with the nearby towns police departments during development of the Truck Traffic Control Plan for briefing on local safety precautions and scheduling of school bus routes.

END

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SECTION 01038

PRE-CONSTRUCTION AND PRE-WORK CONFERENCE

1. PRE-CONSTRUCTION CONFERENCE. Prior to or with 21 calendar days after Contractor has been issued the Notice to Proceed, the Contractor shall meet with the Contracting Officer or his representative for a Pre-Construction Conference. The Purpose of this conference is to review submittal requirements, safety, payrolls, labor relations, environmental protection, progress schedules, and payment and procurement of materials. The principal features of work shall also be reviewed and any questions regarding the Contract and work site will be addressed. Prior to this meeting, the Contractor shall submit his proposed Contractor Quality Control Plan, and Safety, Health and Emergency Response Plan. The Contractor Quality Control Program and proposed QC Plan shall be briefly reviewed to provide the Contracting Officer with a general understanding of the QC system.

2. PRE-WORK CONFERENCE. As soon after the Notice to Proceed as practicable, and prior to starting on-site construction, a Pre-Work Conference shall be held between the Contractor and Contracting Officer or his representative. Attendance by the Contractor's superintendent, quality control personnel, safety personnel, and any major subcontractor's job superintendents shall be required. The purpose of this conference is to further redefine the Quality Control System, to thoroughly review the QC Plan, and to develop a mutual understanding of the specific requirements established by the Contract. The specifics of the Contractor's Safety Health and Emergency Response Plan shall also be discussed so that the emergency procedures and safety requirements are understood by all of those directly related to the site work. The Contractor's schedule, particularly for the initial start-up period, shall be discussed. Questions concerning the administrative requirements outlined during the Pre-Construction Conference or any other aspect of the project may also be addressed.

END

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SECTION 01050

PROGRESS MEETINGS AND REPORTS

1. PROGRESS MEETINGS The Contractor shall schedule and administer progress meetings at a minimum of once per week and such additional meetings as required, if requested by the Contracting Officer.

1.1 General Meeting Requirements. The Contractor shall abide by the following general requirements for the progress meetings:

1.1.1 Prepare agenda for meetings.

1.1.2 Make physical arrangements for meetings.

1.1.3 Preside at meetings.

1.1.4 Record the minutes; include significant proceedings and decisions.

1.1.5 Reproduce and distribute copies of minutes within three (3) days after each meeting to participants in the meeting and to parties affected by decisions made at the meeting. Furnish three (3) copies of the minutes to the Contracting Officer or Contracting Officer's representative.

1.2 Attendance

1.2.1 Contracting Officer or Contracting Officer's representative.

1.2.2 Contractor Superintendent.

1.2.3 Contractor's Quality Control Supervisory Engineer.

1.2.4 Contractor's Industrial Hygienist and/or the SSHO.

1.2.5 Subcontractors as appropriate to the agenda.

1.2.6 Suppliers as appropriate to the agenda.

1.2.7 Others.

1.3 Suggested Agenda

1.3.1 Review and approval of minutes of previous meeting.

1.3.2 Review of work progress since previous meeting.

1.3.3. Field observations, problems, conflicts.

1.3.4 Problems which impede construction schedule.

1.3.5 Review of off-site delivery schedules.

1.3.6 Corrective measures and procedures to regain projected schedule.

1.3.7 Revisions to construction schedule.

1.3.8 Progress during succeeding work period.

1.3.9 Coordination of schedules.

1.3.10 Review submittal schedules; expedite as required.

1.3.11 Maintenance of quality and safety standards.

1.3.12 Pending changes and substitutions.

1.3.13 Review proposed changes for: effect on construction schedule and on completion date; and effect on other Contracts of the projects.

1.3.14 Other business.

2. PROGRESS CHARTS. The Contractor shall submit progress charts to indicate the scheduled completion dates of the principal features of the work.

END OF SECTION

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SECTION 01100

SPECIAL CLAUSES

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| 2. LIQUIDATED DAMAGES- CONSTRUCTION | 19. EQUIPMENT OWNERSHIP AND OPERATION EXPENSE SCHEDULE |
| 3. CONTRACT DRAWINGS AND SPECIFICATIONS | 20. AS-BUILT DRAWINGS |
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| 10. QUANTITY SURVEYS | 27. NOT USED |
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| 15. CONTRACTOR QUALITY CONTROL (CQC) | 32. NOT USED |
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| 17. NOT USED | 34. PROFIT |
| | 35. NOT USED |
| | 36. NOT USED |

Attachments:

Project Sign Std. Details OD15-9A12 and OD15-9A23

Transmittal Form (ENG Form 4025)

Construction Quality Control Daily Report Form

Value Improvement Proposal (MRO Form 1829)

1. COMMENCEMENT, PROSECUTION, AND COMPLETION OF WORK. The Contractor shall commence work under this contract within ten (10) calendar days after the date of receipt by him of Notice to Proceed, prosecute said work diligently, and complete the entire work ready for use not later than 180 calendar days after receipt of Notice to Proceed. The time stated for completion shall include final cleanup of the premises.

1.1 START WORK. Evidence that the Contractor has started procurement of materials, preparation and submission of shop drawings, preparation of subcontracts, and other preparatory work will satisfy the requirement that work commence within ten (10) calendar days after receipt of Notice to Proceed. Therefore, work need not be commenced at the construction site within ten (10) calendar days. (based on FAR 52.212-3)

2. LIQUIDATED DAMAGES-CONSTRUCTION.

2.1 FAILURE TO COMPLY. If the Contractor fails to complete the work within the time specified in the contract, or any extension, the Contractor shall pay to the Government as liquidated damages, the sum of \$370.00 for each day of delay.

2.2 CONTRACT TERMINATED. If the Government terminates the Contractor's right to proceed, the resulting damage will consist of liquidated damages until such reasonable time as may be required for final completion of the work together with any increased costs occasioned the Government in completing the work.

2.3 CONTRACT NOT TERMINATED. If the Government does not terminate the Contractor's right to proceed, the resulting damage will consist of liquidated damages until the work is completed or accepted. (based on FAR 52.212-5)

2.4 EXCEPTION TO COMPLETION TIME AND LIQUIDATED DAMAGES. In case the Contracting Officer determines that seeding and/or the specified maintenance thereof is not feasible during the construction period, such work will be excepted from the completion time and liquidated damages. This work shall be accomplished during the first seeding, and sodding period and the specified maintenance period following the completion date.

3. CONTRACT DRAWINGS AND SPECIFICATIONS.

3.1 SETS FURNISHED. Ten (10) sets of contract drawings (5 sets full size and 5 sets half size) and specifications (except applicable publications incorporated into the Technical Provisions by reference) will be furnished the Contractor without charge as soon as possible after issue of the Notice To Proceed. Prior to the issue of contract drawings, bid drawings as amended shall be utilized in performance of the work. The work shall conform to the contract drawings, set out in the drawing index, all of which form a part of these specifications. The work shall also conform to the standard details bound or referenced herein.

3.2 NOTIFICATION OF DISCREPANCIES. The Contractor shall check all drawings furnished him immediately upon their receipt and shall promptly notify the Contracting Officer of any discrepancies. Dimensions marked on drawings shall be followed in lieu of scale measurements. Enlarged plans and details shall govern where the same work is shown at smaller scales. The Contractor shall compare all drawings and verify the figures before laying out the work and will be responsible for any errors which might have been avoided thereby.

4. SUBMITTALS. Submittals of work related items shall be made in accordance with Section 01340.

5. PHYSICAL DATA. Pursuant to CONTRACT CLAUSES clause: "Site Investigation and Conditions Affecting the Work," information and data

furnished or referred to below are furnished for general information only and the Government may not be held liable for any interpretation or conclusions drawn therefrom by the Contractor.

5.1 SOURCE OF DATA. The physical conditions indicated on the drawings and in the specifications are the result of site investigations by surveys, auger borings and test pits. The data shown graphically and by symbol for each respective boring represents the actual geologic features observed and logged at the location given on the drawings. While the borings are representative of subsurface conditions at their respective locations and for their respective vertical reaches, local minor variations characteristic of the subsurface materials of this region could occur.

5.2 WEATHER. Weather conditions shall have been investigated by the Contractor to satisfy himself as to the hazards likely to arise therefrom. Complete weather records and reports may be obtained from the local U.S. Weather Bureau.

5.3 ACCESS ROUTES. Transportation facilities shall have been investigated by the Contractor to satisfy himself as to the existence of access highways and railroad facilities. (based on FAR 52.236-4)

6. PAYMENT.

6.1 PROMPT PAYMENT ACT. Final payment under this contract, for which construction, alteration, or repair services are provided in a series of partial executions or deliveries, will be made within 30-45 days after final acceptance of the work and receipt of a voucher which has been properly executed by the Contractor, approved by the Contracting Officers representative, and received at the paying office. (See CONTRACT CLAUSES clause "Payments Under Fixed-Price Construction Contracts (1984 Apr).")

6.2 PAYMENT FOR MATERIALS DELIVERED OFFSITE. In accordance with CONTRACT CLAUSES clause: "Payments Under Fixed-Price Construction contracts," the Contracting Officer, at his discretion, may authorize material delivered to the Contractor at locations other than the site be taken into consideration in the preparation of payment estimates. Such materials delivered to the Contractor offsite will only be considered if the Contractor furnishes satisfactory evidence that he has acquired title to such material and that it will be utilized in the work covered under this contract.

7. AVAILABILITY OF UTILITY SERVICES. It is anticipated that all reasonably required domestic water, telephone, and electricity are available in close proximity to the site. The Contractor shall, at his own expense, make all temporary connections and install distribution lines. The Contractor shall make arrangements with the Using Service, through the Contracting Officer, as to the method of determining the amount of water and electricity to be used by him and the method of payment therefor. All temporary lines shall be maintained by the Contractor in a workmanlike manner satisfactory to the Contracting Officer and shall be removed by the Contractor in like manner prior to final acceptance of the construction.

8. UTILITY SERVICE INTERRUPTIONS. The Contractor shall submit written notification not less than 15 calendar days in advance of each interruption of each utility and communication service to or within existing buildings

and facilities being used by others. No single outage will exceed 4 hours unless approved in writing. The time and duration of all outages will be coordinated with the Using Agency by the Contracting Officer.

9. LAYOUT OF WORK. The Contractor shall lay out his work in accordance with Section 01800.

10. QUANTITY SURVEYS.

10.1 The Contractor shall make such surveys and computations as are necessary to determine the quantities of work performed or placed during each period for which a progress payment is to be made. The Contractor shall also make original and final surveys. The Government will make such computations as are necessary to verify the quantities of work performed or finally in place. Unless waived by the Contracting Officer in each specific case, quantity surveys made by the Contractor shall be made under the direction of a representative of the Contracting Officer.

10.2 All original field notes, computations, and other records of the contractor for the purposes of layout, original, progress, and final surveys shall be recorded in duplicating field books, the original pages of which shall be furnished promptly in ring binders to the representative of the Contracting Officer at the site of the work and shall be used by the contracting Officer to the extent necessary in determining the proper amounts of progress and final payments. (based on FAR 52.236-16)

10A. VARIATIONS IN ESTIMATED QUANTITIES SUBDIVIDED ITEMS.

10A.1 Variation from the estimated quantity in the actual work performed under any second or subsequent sub-item or elimination of all work under such a second or subsequent sub-item will not be the basis for an adjustment in the contract unit price.

10A.2 Where the actual quantity of work performed for a subdivided bid item is less than 90 percent of the quantity of the first sub-item listed under such item, the Contractor will be paid at the contract unit price for that sub-item for the actual quantity of work performed and, in addition, an equitable adjustment in the contract price shall be made upon demand of the Contractor. The equitable adjustment in price for the underrun shall be made on the basis that the Contractor has assumed the risk and is entitled to no adjustment for the first 10 percent underrun.

10A.3 If the quantity of work performed under a subdivided bid item exceeds 105 percent or is less than 96 percent of the total estimated quantity of the sub-items under that bid item, and/or if the quantity of work performed under a second sub-item exceeds 105 percent of the estimated quantity of any such sub-item, and if such variation causes an increase or a decrease in the time required for performance of this contract, the contract completion time will be adjusted as follows:

10A.3.1 If the quantity variation is such that it will cause an increase in the time necessary for completion, the Contracting Officer shall, upon receipt of a written request for an extension within 10 days from the beginning of such delay or within such further period of time which the Contracting Officer grants prior to the date of final settlement of the contract, ascertain the facts and make such adjustment for extending the completion date as in his judgment the findings justify.

10A.3.2 If the quantity variation is such that it will cause a decrease in the time necessary for completion, the Contracting Officer shall ascertain the facts and promptly notify the Contractor in writing of his findings and the extent of the adjustment.

10A.4 If the parties fail to agree upon the adjustment to be made, the dispute shall be determined as provided in Contract Clauses clause entitled "Disputes".

11. TIME EXTENSIONS FOR UNUSUALLY SEVERE WEATHER.

11.1 ANTICIPATED WEATHER DELAYS. This clause specifies the procedure for the determination of time extensions for unusually severe weather under the authority of the contract clause entitled "Default (Fixed-Price Construction)." The listing below defines monthly anticipated adverse weather for the contract period and is based on National Oceanic and Atmospheric Administration (NOAA) or similar data for the geographic location of the project.

MONTHLY ANTICIPATED ADVERSE WEATHER WORKDAYS											
JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
(14)	(8)	(8)	(10)	(9)	(8)	(6)	(6)	(5)	(6)	(7)	(9)

11.2 WEATHER TIME EXTENSIONS.

11.2.1 Evaluation. The above schedule of anticipated adverse weather will constitute the base line for monthly (or portion thereof) weather time evaluations. Upon acknowledgement of the Notice to Proceed and continuing throughout the contract on a monthly basis, actual adverse weather days will be recorded on a work day basis (including weekends and holidays) and compared to the monthly anticipated adverse weather schedule above. For Purposes of this paragraph, the term "actual adverse weather days" shall be scheduled work days impacted by adverse weather.

11.2.2 Determination. The number of actual adverse weather days shall be recorded monthly during the construction period. Once the number of actual adverse weather days anticipated in the schedule above have been exceeded, the Contracting Officer will examine the actual adverse weather days to determine whether the Contractor is entitled to a time extension. These actual adverse weather days must prevent work for 50 percent or more of the Contractor's workday, delay scheduled work critical to the timely completion of the project, and be documented in the Contractor Quality Control reports. The Contracting Officer will convert any delays meeting the above requirements to calendar days and issue a modification under the authority of the contract clause entitled "Default (Fixed-Price construction)."

11.3 THE CONTRACTOR'S SCHEDULE must reflect the above anticipated adverse weather delays on all weather dependent activities.

12. PENNSYLVANIA SALES AND USE TAX.

12.1 In the event goods, wares or merchandise on which the Contractor has paid Pennsylvania sales or use tax become an integral part of the project, the Contractor shall obtain appropriate forms from the Pennsylvania State Tax Commission for recording the amount of

purchases of such goods, wares, or merchandise, and shall complete, execute, and deliver them to the Contracting Officer prior to final settlement of the contract. The Contractor shall provide and report all data and information which may be necessary or required to enable the Contracting Officer to obtain all refunds from the Pennsylvania Tax Commission to which the Federal Government may be entitled.

12.2 The Contractor shall insert a clause containing the substance of the foregoing paragraph 12.1 in every first-tier subcontractor or vendor to include such a clause in any subcontract or purchase order which he places. The Contractor shall obtain completed forms from his subcontractor and suppliers for submission to the Contracting Officer before final settlement of the contract.

13. INSURANCE - LIABILITY TO THIRD PERSONS - COMMERCIAL ORGANIZATIONS.

13.1 The parties agree that this Clause will be modified within 180 days of the United States Environmental Protection Agency's (EPA) promulgation of final guidelines for carrying out the provisions of Section 119 of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, as amended (CERCLA).

13.2 In accordance with CONTRACT CLAUSE "Insurance - Work on a Government Installation," the Contractor shall procure and maintain the following minimum insurance:

<u>TYPE</u>	<u>AMOUNT</u>
Workmen's Compensation and Employers Liability Insurance	\$100,000
General Liability Insurance	\$500,000 per occurrence
Automobile Liability Insurance	
Bodily Injury	\$200,000 per person and \$500,000 per occurrence
Property Damage	\$20,000 per occurrence

13.3 Even though pollution liability insurance is generally not available at this time, the Contractor agrees that will make diligent efforts throughout contract performance to obtain adequate pollution liability insurance in accordance with EPA guidelines.

13.4 The Contractor agrees, to the extent and in the manner required by the Contracting Officer, to submit for the approval of the Contracting Officer all insurance maintained by the Contractor in connection with the performance of this contract and for which the Contractor seeks reimbursement hereunder. The Contractor's submission shall include documentation demonstrating its diligent efforts to obtain pollution liability insurance.

13.5 In making progress payments on the contract price, the Government shall upon request reimburse the Contractor the reasonable and allocable cost of insurance (including reserves for self-insurance) as required or approved under this provision.

13.5.1 Pursuant to Section 119 of CERCLA, the Government will hold harmless and indemnify the Contractor against any liability (including the expenses of litigation or settlement) for negligence arising out of the Contractor's performance under this contract in carrying out response action

activities. Such indemnification shall apply only to liability not compensated by insurance or otherwise and shall apply only to liability which results from a release of any hazardous substance or pollutant or contaminant if such release arises out of the response action activities of this contract. Further, any liability within the deductible amounts of the Contractor's insurance will not be covered under this provision.

13.5.2 For purposes of this provision (13.5), if the Contracting Officer has determined that the insurance identified in paragraph (13.3) is not available at a reasonable cost, the Government will hold harmless and indemnify the Contractor for liability to the extent such liability exceeds \$100,000.00.

13.5.3 The Contractor shall not be reimbursed for liabilities defined in (13.5.1) or (13.5.2) above (including the expenses of litigation or settlement) that were caused by conduct of the Contractor (including any conduct of its directors, managers, staff, representatives or employees) which was grossly negligent, constituted intentional misconduct, or demonstrated a lack of good faith. Further, the Contractor shall not be indemnified for liability arising under strict tort liability, or any other basis of liability other than negligence.

13.6 The Government may discharge its liability under this contract clause by making payments directly to the Contractor or directly to parties to whom the Contractor may be liable.

13.7 With prior written approval of the Contracting Officer, the Contractor may include in any subcontract under this contract the same provisions in this clause whereby the Contractor shall indemnify the subcontractor. Such a subcontract shall provide the same rights and duties and the same provisions for notice, furnishing of evidence or proof, and the like, between the Contractor and the subcontractor as are established by this Provision. Similar indemnification may be provided for subcontractors at any time upon the same terms and conditions. Subcontractors providing for indemnification within the purview of this provision shall provide for prompt notification to the Contractor which is covered by this contract clause, and shall entitle the Government, at its election, to control, or assist in the settlement or defense of any such claim or action. The Government will indemnify the Contractor with respect to his obligation to subcontractors under such subcontract provisions. The Government may discharge its obligations under this paragraph by making payments directly to subcontractors or to parties to whom the subcontractors may be liable.

13.8 If insurance coverage required or approved by the Contracting Officer is reduced without the Contracting Officer's approval, the liability of the Government under this contract clause will not be increased by reason of such reduction.

13.9 The Contractor shall:

13.9.1 Promptly notify the Contracting Officer of any claim or action against the Contractor or any subcontractor which reasonably may be expected to involve indemnification under this contract clause:

13.9.2 Furnish evidence or proof of any claim covered by the contract clause in the manner and form required by the Government; and

13.9.3 Immediately furnish the Government copies of all pertinent papers received by the Contractor. The Government may direct, control, or assist the settlement or defense of any such claim or action. The

Contractor shall comply with the Government's directions, and execute any authorizations required in regard to such settlement or defense.

13.10 Reimbursement for any liabilities under this contract clause will not exceed appropriations available from CERCLA's Hazardous Substance Superfund (except to the extent that Congress may make appropriations to specifically fund any deficiencies) at the time such liabilities are represented by final judgments or by settlements approved in writing by the Government.

14. NOT USED

15. CONTRACTOR QUALITY CONTROL (CQC). In conformance with the requirements of CONTRACT CLAUSES clause: "Inspection of Construction," the Contractor shall establish and maintain an effective Quality Control Program.

15.1 GENERAL. The quality of all work shall be the responsibility of the Contractor. Sufficient inspections and tests of all items of work, including that of subcontractors, to ensure conformance to applicable specifications and drawings with respect to the quality of materials, workmanship, construction, finish, functional performance, and identification shall be performed on a continuing basis. The Contractor shall furnish qualified personnel, appropriate facilities, instruments and testing devices necessary for the performance of the quality control function. The controls shall be adequate to cover all construction operations both on and offsite, shall be keyed to the proposed construction sequence and shall be correlated by the Contractor's quality control personnel.

15.2 PRECONSTRUCTION PLANNING. The Government will consider an interim CQC plan for the first days of operation. However, within ten (10) calendar days after the date of receipt by him of Notice to Proceed, and Prior to starting on-site construction, the Contractor shall meet with the Contracting Officer and discuss the quality control requirements. Five (5) days prior to this meeting, the Contractor shall submit for approval his proposed written QC Plan which shall include all features outlined below. The proposed plan will be reviewed and the meeting shall develop mutual understanding relative to details of the system, including the personnel, facilities, forms, etc., to be used for the inspections, tests and the administration of the system. Minutes of the meeting shall be prepared by the Area Office Resident Engineer or Contractor as agreed to at the mutual understanding meeting and shall be signed by both the Contractor and the Contracting Officer or Contracting Officer's Representative. The minutes shall become a part of the contract. No change in the approved plan shall be implemented without written concurrence by the Contracting Officer.

15.3 ACCEPTANCE OF CQC PLAN. Acceptance of the Contractor's quality control plan is required prior to the start of construction. Acceptance is conditional and will be predicated on satisfactory performance during the construction. The Government reserves the right to require the Contractor to make changes in his CQC plan and operations as necessary to obtain the quality specified.

15.4 CONTRACTOR'S PROPOSED QUALITY CONTROL (QC) PLAN. The Contractor's proposed written Quality Control Plan (for submittal at the mutual understanding meeting) shall include as a minimum:

15.4.1 The quality control organization.

15.4.2 Names, number, and qualification of personnel to be used for this purpose.

15.4.3 Authority and responsibilities of all quality control personnel.

15.4.4 Schedule of Use of inspection personnel by types and Phase of work.

15.4.5 A list of preparatory and initial inspections to be performed shall be included as part of the Quality Control Program.

15.4.6 A list of tests specified to be performed with proposed test methods including specification paragraph number and names of technicians or qualified testing laboratory to be used.

15.4.7 Method of performing, documenting, and enforcing quality control operations of both prime and subcontract work including inspection and testing.

15.4.8 A copy of a letter of direction to the Contractor's representative responsible for quality control, outlining his duties and responsibilities, and signed by a responsible officer of the firm.

15.5 CONTROL OF ON-SITE CONSTRUCTION. The Contractor's quality control program shall include four phases of inspection and tests. The Contracting Officer's representative shall be notified at least 24 hours in advance of each such test.

15.5.1 Preparatory Inspections shall be performed prior to beginning each feature of work on any on-site construction work. Preparatory inspections for the applicable feature of work shall include (i) review of submittal requirements and all other contract requirements with the foremen or supervisors directly responsible for the performance of the work; (ii) check to assure that provisions have been made to provide required field control testing; (iii) examine the work area to ascertain that all preliminary work has been completed; (iiii) verify all field dimensions and advise the Contracting Officer of any discrepancies; and (iiiii) perform a physical examination of materials and equipment to assure that they conform to approved shop drawings or submittal data and that all materials and/or equipment are on hand.

15.5.2 Initial Inspection shall be performed as soon as work begins on a representative portion of the particular feature of work and shall include examination of the quality of workmanship as well as a review of control testing for compliance with contract requirements.

15.5.3 Follow-up Inspections shall be performed continuously as any particular feature of work progresses, to assure compliance with contract requirements including control testing, until completion of that feature of the work.

15.5.4 Safety Inspections. The Contractor's Safety and Health Staff shall perform daily safety and health inspections of the jobsite and the work in progress to assure compliance with EM 385-1-1 and other occupational health and safety requirements of the contract. Daily inspection reports shall be submitted noting safety and health deficiencies observed and the corrective actions taken.

15.5.5 Recording Inspection Results. The results of all inspections

shall be made a matter of record in the Contractor's Quality Control documentation as required by subparagraph "Documentation" below.

15.6 QUALITY CONTROL STAFF. The Contractor's job supervisory staff may be used for quality control supplemented as necessary by additional personnel including special technicians for surveillance or testing to provide capability for the controls required by the specifications. The Contractor's staff member designated as the Q.C. Supervisory Engineer for the contract must be a qualified engineer with a minimum of three (3) years experience in quality control. The Contractor shall also provide a qualified engineer or technician with a minimum of three (3) years experience in soils and geotechnical quality control for the quality control staff. Both of these personnel shall be able to demonstrate their ability to perform correctly the duties required to the satisfaction of the Contracting Officer and must be employed full time at the project site whenever contract work is in progress.

15.7 TESTS.

15.7.1 Testing Procedure. The Contractor shall perform tests specified or required to verify that control measures are adequate to provide a product which conforms to contract requirements. The Contractor shall Procure the services of an industry recognized testing laboratory or may establish an approved testing laboratory at the project site. The Contractor shall perform the following activities and record and provide the following data:

15.7.1.1 Verify that testing procedures comply with contract requirements.

15.7.1.2 Verify that facilities and testing equipment are available and comply with testing standards.

15.7.1.3 Check test instrument calibration data against certified standards.

15.7.1.4 Verify that recording forms, including all of the test documentation requirements, have been prepared.

15.7.2 Testing.

15.7.2.1 Capability Check. The Contracting Officer's Representative (COR) will have the right to check laboratory equipment in the Proposed laboratory for compliance with the standards set forth in the contract specifications and to check the laboratory technician's testing Procedures and techniques.

15.7.2.2 Capability Re-Check. If the selected laboratory fails the capability check, the Contractor will be assessed the actual cost for the re-check as reimbursement to the Government for each succeeding re-check of the laboratory or the checking of a subsequently-selected laboratory. Such costs will be deducted from the contract amount due the contractor.

15.7.2.3 Project Laboratory. The COR will have the right to utilize the Contractor's control testing laboratory and equipment to make assurance tests and to check the Contractor's testing procedures, techniques, and test results at no additional cost to the Government.

15.8 REPORTING. All inspections and test results shall be recorded daily.

15.8.1 Daily Submittals. The attached sample "Quality Control Daily Report" form may be reproduced and fully executed to show all inspections and tests and submitted in duplicate to the Contracting Officer's

representative on the first work day following the date covered by the report.

15.8.2 Results of Tests. Triplicate copies of complete results of tests shall be submitted not later than 3 calendar days after performing the test.

15.9 COMPLETION INSPECTION. At the completion of all work or any increment thereof established by a completion time stated in paragraph: "commencement, Prosecution, and Completion of Work" or stated elsewhere in the specifications, the QC Supervisory Engineer shall conduct a completion inspection of the work and develop a 'punch list' of items which do not conform to the plans and specifications. Such a list of deficiencies shall be included in the CQC documentation, as required by subparagraph entitled "Documentation," and shall include the estimated date by which the deficiencies will be corrected. The QC Supervisory Engineer or his staff shall make a second completion inspection to ascertain that all deficiencies have been corrected and so notify the Contracting Officer's Representative. The completion inspection and any deficiency corrections required by this paragraph shall be accomplished within the time stated for completion of the entire work or any increment thereof.

15.10 DOCUMENTATION.

15.10.1 The Contractor shall maintain current records of quality control operations, activities, and tests performed including the work of suppliers and subcontractors. These records shall be on an acceptable form and indicate a description of trades working on the project, the number of personnel working, the weather conditions encountered, any delays encountered, and acknowledgment of deficiencies noted along with the corrective actions taken on current and previous deficiencies. These records shall include factual evidence that required activities or tests have been performed, including but not limited to the following:

15.10.1.1 Type and number of control activities and tests involved.

15.10.1.2 Nature of defects and causes of rejection.

15.10.1.3 Proposed remedial action.

15.10.1.4 Corrective actions taken.

15.10.2 These records shall cover both conforming and defective or deficient features and shall include a statement that supplies and materials incorporated in the work comply with the contract. Legible copies of these records shall be furnished to the COR daily.

15.11 ENFORCEMENT. The contractor shall stop work on any item or feature, pending satisfactory correction of any deficiency noted by his quality control staff or by the Contracting Officer's representative. Construction shall not proceed upon any feature of work containing uncorrected work. Notations on quality control reports will not be acceptable as a substitution for other written reports by the Contractor if required under CONTRACT CLAUSES: "Changes," "Differing Site Conditions," or "Default (Fixed- Price Construction)."

15.12 NOTIFICATION OF NONCOMPLIANCE. The Contracting Officer will notify the contractor of any noncompliance with the foregoing requirements. The Contractor shall, after receipt of such notice, immediately take corrective action. Such notice, when delivered to the Contractor or his representative at the site of the work, shall be deemed sufficient for the purpose of notification. If the Contractor fails or refuses to comply

promptly, the Contracting Officer may issue an order stopping all or part of the work until satisfactory corrective action has been taken. No part of the time lost due to any such stop orders shall be made the subject of claim for extension of time or for excess costs or damages by the Contractor.

15.13 PAYMENT. At the election of the Contracting Officer, no payment estimate will be processed under this contract until the entire Quality Control Plan has been approved or until overdue daily QC reports are properly executed and furnished.

16. NON-DOMESTIC CONSTRUCTION MATERIALS. The requirements of this contract entitled Buy American Act - Construction Materials do not apply to construction materials or their components included in the list set forth in paragraph 25.108 of the Federal Acquisition Regulation.

17. NOT USED

18. NOT USED

19. EQUIPMENT OWNERSHIP AND OPERATING EXPENSE SCHEDULE.

19.1 Allowable cost for construction and marine plant and equipment in sound workable condition owned or controlled and furnished by a Contractor or subcontractor at any tier shall be based on actual cost data when the Government can determine both ownership and operating costs for each piece of equipment or equipment groups of similar serial and series from the Contractor's accounting records. When both ownership and operating costs cannot be determined from the Contractor's accounting records, equipment costs shall be based upon the applicable provisions of EP 1110-1-8, "Construction Equipment Ownership and Operating Expense Schedule," Region I. Copies of each regional schedule may be obtained from the General Printing Office (202-783-3238) at a cost of \$9.50 per schedule. Working conditions shall be considered to be average for determining equipment rates using the schedule unless specified otherwise by the Contracting Officer. For equipment not included in the schedule, rates for comparable pieces of equipment may be used or a rate may be developed using the formula provided in the schedule. For forward pricing, the Schedule in effect at the time of negotiations shall apply. For retrospective pricing, the Schedule in effect at the time the work was performed shall apply.

19.2 Equipment rental costs are allowable, subject to the provisions of FAR 31.105(d)(ii) and FAR 31.205-36, substantiated by certified copies of paid invoices. Rates for equipment rented from an organization under common control, lease-purchase, or sale-leaseback arrangements will be determined using the schedule except that rental costs leased from an organization under common control that has an established practice of leasing the same or similar equipment to unaffiliated lessees are allowable. Costs for major repairs and overhaul are unallowable.

19.3 When actual equipment costs are proposed and the total amount of the pricing action is over \$25,000, cost or pricing data shall be submitted on Standard Form 1411, "Contract Pricing Proposal Cover Sheet." By submitting cost or pricing data, the Contractor grants to the Contracting Officer or an authorizing representative the right to examine those books, records, documents, and other supporting data that will permit evaluation

of the proposed equipment costs. After price agreement, the Contractor shall certify that the equipment costs or pricing data submitted are accurate, complete, and current. (EFARS 52.2/9108(f).)

20. AS-BUILT DRAWINGS. The Contractor shall maintain two separate sets of red-lined full scale, as-built construction drawings marked-up to fully indicate as-built conditions. These drawings shall be maintained in a current condition at all times until completion of the work and shall be available for review by Government personnel at all times. All variations from the contract drawings, for whatever reason, including those occasioned by optional materials and the required coordination between trades, shall be indicated. These variations shall be shown in the same general detail utilized in the initial contract drawings. Both sets of as-built construction drawings shall be furnished to the Contracting Officer on the date of final inspection. The submittal requirement for as-built construction drawings shall be shown as a separate activity on the Contractor Prepared progress bar chart or network analysis system, whichever is applicable.

21. SIGN. On commencement of work on this project, the Contractor shall furnish and erect the temporary sign in the location selected by the Contracting Officer near the project site. The Contractor shall maintain the sign in good condition through the project construction period and on completion of the project shall remove the sign from the premises. The project sign shall conform to Standard Drawing OD15-9A12 and OD15-9A23 bound herein. A decal of the "Engineer Castle" will be furnished the Contractor upon request.

22. NOT USED

23. NOT USED

24. CONTRACTOR FURNISHED EQUIPMENT DATA. At or before 30 days prior to final inspection and acceptance of the work, the Contractor shall submit the data mentioned in the following sub-clauses.

24.1 EQUIPMENT LIST. An itemized equipment list showing unit retail value and nameplate data including serial number, model number, size, manufacturer, etc., for all Contractor-furnished items of plumbing fixtures, laboratory counters and cabinets, kitchen equipment, mechanical equipment, electrical equipment, and fire protection systems installed under this contract.

24.2 GUARANTEES. A list of all equipment items which are specified to be guaranteed accompanied by a copy of each specific guarantee therefor. For each specific guaranteed item the name, address, and telephone number shall be shown on the list for subcontractor who installed equipment, equipment supplier or distributor, and equipment manufacturer. Completion date of the guarantee period shall correspond to the applicable specification requirements for each guaranteed item.

25. NOT USED

26. NOT USED

27. NOT USED

28. NOT USED

29. PERFORMANCE EVALUATION OF CONTRACTOR. The Contractor's performance will be evaluated upon final acceptance of the work. However, interim evaluation may be prepared at any time during contract performance when determined to be in the best interest of the Government. The format for the evaluation will be SF 1420, and the contractor will be rated either outstanding, satisfactory, or unsatisfactory in the areas of Contractor Quality Control, Timely Performance, Effectiveness of Management, Compliance with Labor Standards, and Compliance with Safety Standards. The Contractor will be advised of any unsatisfactory rating, either in an individual element or in the overall rating, prior to completing the evaluation, and all Contractor comments will be made a part of the official record. Performance Evaluation Reports will be available to all DOD Contracting offices for their future use in determining Contractor responsibility, in compliance with DFARS 36.201(c)(1). (EFARS 52.2/9006.)

30. PERFORMANCE OF WORK BY CONTRACTOR (1984 APR). The Contractor shall perform on the site, and with its own organization, work equivalent to at least twenty (20) percent of the total amount of work to be performed under the contract. This percentage may be reduced by a supplemental agreement to this contract if, during performing the work, the contractor requests a reduction and the Contracting Officer determines that the reduction would be to the advantage of the Government. (FAR 52.236-1)

31. NOT USED

32. NOT USED

33. VALUE IMPROVEMENT.

33.1 PROPOSAL. Bidders are encouraged to submit value improvement proposals. Only proposals submitted by bidders with their bid or within 14 days following the bid opening will be considered. Also, the estimated total savings of each proposal must be \$25,000 or greater to be considered. Such proposals must offer an equal or better method, procedure, material or design to complete the contract at less cost. Proposals shall be submitted on the attached MRO Form No. 1829 entitled VALUE IMPROVEMENT PROPOSAL (reproducible) and shall address the specific areas of the solicitation which the bidder proposes to change. Each proposal shall be presented on a separate value improvement proposal form. Proposals shall include specific data, calculations, design and drawing information sufficient to explain the change and allow an evaluation. Proposals shall itemize and explain the estimated instant contract savings. This clause does not contemplate, and the bidder shall not include, collateral or future savings in its proposal. The Contracting Officer will review the proposal and, if all or any part is determined to have merit, it will be considered for inclusion in the contract after award.

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33.2 SHARING. If the proposed change or any part thereof is incorporated into the awarded contract, the bidder who submitted the proposal shall receive 50 percent of the instant contract savings realized by the Government from the change. If a contract change results from a proposal submitted by more than one unsuccessful bidder, 50 percent of the instant contract savings will be shared equally by those unsuccessful bidders. Unsuccessful bidders who submit value improvement proposals which are substantially identical to proposals submitted by the successful bidder are not eligible to share in the savings that may result from their implementation. Payment for accepted proposals will be made to unsuccessful bidders through separate contractual instruments. Accepted value improvement proposals submitted by the successful bidder will be converted to value engineering change proposals and processed in accordance with the CONTRACT CLAUSES clause: VALUE ENGINEERING -CONSTRUCTION.

33.3 USE AND ACCEPTANCE. The Government reserves the right to use any value improvement proposal accepted and incorporated in the contract for future designs and projects at no additional cost. The decision of the Contracting Officer to accept or reject all or any part of the proposal shall be final and not subject to the DISPUTES clause or otherwise subject to litigation under the Contract Disputes Act of 1978 (41 USC 601-613).

34. PROFIT.

34.1 Weighted guidelines method of determining profit shall be used on any equitable adjustment change order or modification issued under this contract. The profit factors shall be as follows:

<u>Factor</u>	<u>Rate</u>	<u>Weight</u>	<u>Value</u>
Degree of Risk	20		
Relative difficulty of work	15		
Size of Job	15		
Period of performance	15		
Contractor's investment	5		
Assistance by Government	5		
Subcontracting	25		
	100		

34.2 Based on the circumstances of each procurement action, each of the above factors shall be weighted from .03 to .12 as indicated below. The value shall be obtained by multiplying the rate by the weight. The value column when totalled indicates the fair and reasonable profit percentage under the circumstances of the particular procurement.

34.2.1 Degree of Risk. Where the work involves no risk or the degree of risk is very small, the weighting should be .03; as the degree of risk increases, the weighting should be increased up to a maximum of .12. Lump sum items will have, generally, a higher weighted value than the unit price items for which quantities are provided. Other things to consider: the portion of the work to be done by subcontractors, nature of work, where work is to be performed, reasonableness of negotiated costs, amount of labor included in costs, and whether the negotiation is before or after performance of work.

34.2.2 Relative Difficulty of Work. If the work is most difficult and complex, the weighting should be .12 and should be proportionately reduced

to .03 on the simplest of jobs. This factor is tied-in to some extent with the degree of risk. Some things to consider: the nature of the work, by whom it is to be done, where, and what is the time schedule.

34.2.3 Size of Job. All work not in excess of \$100,000 shall be weighted at .12. Work estimated between \$100,000 and \$5,000,000 shall be proportionately weighted from .12 to .05.

34.2.4 Periods of Performance. Jobs in excess of 24 months are to be weighted at .12. Jobs of lesser duration are to be proportionately weighted to a minimum of .03 for jobs not to exceed 30 days. No weight where additional time not required.

34.2.5 Contractor's Investment. To be weighted from .03 to .12 on the basis of below average, average, and above average. Things to consider: amount of subcontracting, mobilization payment item, Government-furnished property, equipment and facilities, and expediting assistance.

34.2.6 Assistance by Government. To be weighted from .12 to .03 on the basis of average to above average. Things to consider: use of Government-owned property, equipment and facilities, and expediting assistance.

34.2.7 Subcontracting. To be weighted inversely proportional to the amount of subcontracting. Where 80 percent or more of the work is to be subcontracted, the weighting is to be .03 and such weighting proportionately increased to .12 where all the work is performed by the Contractor's own forces.

35. NOT USED

36. NOT USED

END

01100-16

AR301716

A B C D E F G H I
J K L M N O P Q R
S T U V W X Y Z
a b c d e f g h i j k l m
n o p q r s t u v w x y z
1 2 3 4 5 6 7 8 9 10

A B C D E F G H I J K L M
N O P Q R S T U V W X Y Z
a b c d e f g h i j k l m
n o p q r s t u v w x y z
1 2 3 4 5 6 7 8 9 10

Note: Above lettering styles are Helios Extra Bold Condensed and Helios Bold II.
Helvetica Black Roman and Helvetica Bold Roman are acceptable substitutes.

AR301717

STANDARD
ALPHABET & NUMERALS
OFFICE OF THE DISTRICT ENGINEER
OMAHA, NEBRASKA
REV. NOVEMBER, 1982

[illegible]

6'-0"

2'-0"

4"



US Army Corps
of Engineers

EPA

State

(Project Title)

3 1/2"

2"

ENGINEER:

CAMP DRESSER & MCKEE Inc.

CONTRACTOR:

2

4'-0"

6'-0"

SIGN MATERIALS

POST 4" X 4", 3/4" EXTERIOR PLYWOOD 4'-0" X 6'-0", 1" X 2" FRAMING WITH MITERED CORNERS. EDGES OF PLYWOOD SHALL BE SEALED PRIOR TO PAINTING.

PAINTING

ALL SURFACES SHALL BE GIVEN ONE COAT OF EXTERIOR WHITE FED. SPEC. TT-P-0025E AND TWO COATS OF WHITE ENAMEL. ALL PAINTED LETTERING SHALL BE BLACK ENAMEL. ENAMELS SHALL CONFORM TO FED. SPEC. TT-E-439F.

THE CASTLE INSIGNIA AND SIGNATURE SHALL BE FURNISHED BY THE GOVERNMENT IN PRESSURE SENSITIVE VINYL FOR AFFIXING BY THE CONTRACTOR.

LETTERING

ALL LETTERING IS TO BE HELVETICA BOLD OR HELVETICA MEDIUM. LETTERING SIZE SHALL BE DETERMINED BY THE AMOUNT OF INFORMATION TO BE PRINTED ON SIGN. NO LETTERING HEIGHT SHALL EXCEED THE SIZE SPECIFIED. ALL INFORMATION IS TO BE LAID OUT AS SHOWN.

PROJECT SIGN

AR301719

INSTRUCTIONS

1. Section I will be initiated by the Contractor in the required number of copies.
2. Each transmittal shall be numbered consecutively in the space provided for "Transmittal No." This number, in addition to the contract number, will form a serial number for identifying each submittal. For new submittals or resubmittals mark the appropriate box on re-submittals, insert transmittal number of last submission as well as the new submittal number.
3. The "Item No." will be the same "Item No." as indicated on ENG Form 4288 for each entry on this form.
4. Submittals requiring expeditious handling will be submitted on a separate form.
5. Separate transmittal form will be used for submittals under separate sections of the specifications.
6. A check shall be placed in the "Variation" column when a submittal is not in accordance with the plans and specifications. Also, a written statement to that effect shall be included in the space provided for "Remarks".
7. Form is self-transmittal; letter of transmittal is not required.
8. When a sample of material or Manufacturer's Certificate of Compliance is transmitted, indicate "Sample" or "Certificate" in column c, section I.
9. U.S. Army Corps of Engineers approving authority will assign action codes as indicated below in space provided in section I, column h, to each item submitted. In addition they will ensure inclosures are indicated and attached to the form prior to return to the contractor.

THE FOLLOWING ACTION CODES ARE GIVEN TO ITEMS SUBMITTED

A	Approved as submitted	E	Disapproved (See attached)
B	Approved, except as noted on drawings.	F	Receipt acknowledged
C	Approved, except as noted on drawings Refer to attached sheet resubmission required	FX	Receipt acknowledged, does not comply as noted with contract requirements.
D	Will be returned by separate correspondence.	G	Other (Specify)

10. Approval of items does not relieve the contractor from complying with all the requirements of the contract plans and specifications.

AR301720

(CONTRACTOR)

AR301721

3. Type and Results of Inspection: (Indicate whether: P-Preparatory, I-Initial, or F-Follow-up and Include Satisfactory Work Completed or Deficiencies with Action to be Taken.) _____

4. List Type and Location of Tests Performed and Results of These Tests: _____

5. Verbal Instructions Received from Government Personnel on Construction Deficiencies or Re-testing Required: _____

6. Safety Violations Observed and Actions Taken: _____

7. Remarks: _____

8. CERTIFICATION: I certify that the above report is complete and correct and that I, or my authorized representative, have inspected all work performed this day by the prime contractor and each subcontractor and have determined that all materials, equipment, and workmanship are in strict compliance with the plans and specifications, except as may be noted above.

Contractor's Designated Quality
Control Representative

AR301722

VALUE IMPROVEMENT PROPOSAL <small>(Bidder submitting proposal to complete all except Blocks 1 & 6)</small>		1. CONTROL NO.: VIP _____ (Leave Blank)
2. NAME AND LOCATION OF PROJECT:	3. SOLICITATION (INVITATION) _____	
5. NAME & ADDRESS OF PROPOSER (As Shown on Bid Form).		4. THIS IS PROPOSAL NO. _____ OF _____ PROPOSALS SUBMITTED WITH BID ON THIS PROJECT. 6. CONTRACT NO. (Leave Blank)
7. BRIEF TITLE OF PROPOSED CHANGE:		
8. DOCUMENTS AFFECTED BY PROPOSAL:		
a. SPECIFICATIONS: SECTION(S) & PARAGRAPH NO.(S): _____		
b. PLANS: DRAWING NO.(S), SHEET NO.(S): _____		
9. COMPLETE DESCRIPTION OF PROPOSED CHANGE: (Include sketches where applicable; Continue on separate sheet if necessary). PROPRIETARY INFORMATION SHALL BE MARKED AND IDENTIFIED BY BIDDER.		
10. PROPOSED SAVINGS \$ _____		
NOTE: ATTACH ITEMIZED ESTIMATE OF PROPOSED SAVINGS (Itemize labor, material, equipment, overhead and profit for the original requirement and for the proposed change. Enter the difference in Item 10 above.)		

SECTION 01150

MEASUREMENT AND PAYMENT1. LANDFILL CLOSURE: GENERAL CONDITIONS (Item 1)

1.1 Payment for all items of construction for the landfill closure which are not unit priced will be made at the lump sum price bid in the Bid Schedule for Item 1, which price and payment shall be full compensation for:

1.1.1 Furnishing all labor, materials, equipment and incidentals required to construct the landfill closure complete as shown on the Drawings and as specified in the Technical Specifications.

1.1.2 This item on the Bidding Schedule represents all work that is not unit priced. The lump sum bid includes but is not limited to: performance and payment bonds; site preparation; clearing and grubbing; ditch construction including rip rap; settlement markers; gravel paving including geotextile fabric; final grading; site management controls; laboratory facilities; sample storage including refrigeration, construction of chain link security fence and gates; mobilization; demobilization; site utilities and utility relocations; removal of light poles and fencing; preparation, implementation, and updating of all special procedures; disposal of all controlled contaminated and non-contaminated rinsate; photographs; safety equipment and clothing; dust controls; medical surveillance program including all required physical examinations; project records and documents; project as-built drawings; construction scheduling; site maintenance and cleanup; site abandonment; shop drawings and certifications; laundering; all record-keeping; site surveying; testing; security guard facilities; site stabilization, controls, inspections, and all management, supervisory and specialized personnel; and all other work specified and not included in the unit priced items. Progress payments shall be based on the percentage of work completed.

2. ON-SITE PERSONNEL REQUIREMENTS (Item 2)

2.1 Payment for Contractor Personnel Requirements will be made at the unit price bid in the Bid Schedule for Item 2, which price and payment shall be full compensation for:

2.1.1 Providing services of a full-time (eight hours per day) Site Safety and Health Officer (SSHO) at all times in which work is performed for the duration of the Work.

2.1.2 Providing service of Security Personnel for 24 hours per day, seven days per week, for the duration of the Work.

2.1.3 Providing photographic identification for all on-site personnel including government personnel, and further providing for the replacement of lost identification as required.

2.1.4 Providing personal safety equipment and protective clothing for on-site personnel, air monitoring equipment, and air quality testing in accordance with the SHERP including replacement of contaminated equipment or

clothing and the drumming and proper disposal of discarded equipment or clothing as required.

3. DRUM REMOVAL (Item 3)

3.1 MEASUREMENT

3.1.1 Drum removal and disposal shall be measured on a per drum basis removed from the landfill.

3.1.2 Drum removal shall include all labor, materials, and equipment required to perform the removal, hauling, and proper disposal of the on-site drums and their contents.

3.2 PAYMENT

3.2.1 Removal of drums at the direction of the Contracting Officer will be paid at the unit price per drum removed bid in the bid Schedule.

4. REMOVAL AND DISPOSAL OF ON-SITE POND WATER (Item 4)

4.1 MEASUREMENT

4.1.1 Pond water removal and disposal shall be measured on a gallons removed basis in place prior to and following removal.

4.1.2 Removal and disposal shall include all labor, materials, and equipment required to remove the water from the on-site pond and other areas on-site where water is ponding, test these waters for contaminant levels, determine the appropriate disposal techniques based on state and federal regulations governing hazardous wastes, and providing the appropriate disposal.

4.2 PAYMENT

4.2.1 Payment for ponded water removal and disposal will be made at the unit price per gallon properly removed from the site bid in the Bidding Schedule.

5. CLOSE ON-SITE WELLS (Item 5)

5.1 MEASUREMENT

5.1.1 Measurement for payment for well closures shall be on a linear foot basis measured from the ground surface to the bottom of the well.

5.2 PAYMENT

5.2.1 Payment for well closures shall be made at the unit price per foot bid in the Bidding Schedule.

6. TEST TRENCHES (Item 6)

6.1 MEASUREMENT

6.1.1 Excavation and backfilling of test trenches shall be measured on a cubic yard basis in place prior to and following excavation of the trenches.

6.2 PAYMENT

6.2.1 Excavation of test trenches as shown on the drawings and as directed by the Contracting Officer will be paid at the unit price per cubic yard bid in the Bidding Schedule.

6.2.2 Unit price and payment shall include all labor, materials, and equipment required to excavate and backfill surface materials and landfill materials to determine the extent of the landfill boundaries.

7. COMMON AND SELECT FILL (Items 7 and 8)

7.1 MEASUREMENT

7.1.1 Measurement for payment for common fill (Item 7) only shall be on a cubic yard basis measured in place after compaction to the lines and grades shown on the Drawings and to the volume so ascertained there shall be added 12.5% to compensate for such loss as may be due to settlement, shrinkage and penetration into the underlying material.

7.1.2 Measurement for select fill (Item 8) shall be on a cubic yard basis measured in place after compaction.

7.2 PAYMENT

7.2.1 Payment for select and common fill completed as specified herein shall be made at the unit price per cubic yard, complete in place including hauling, stockpiling, placing, compacting and final grading.

7.2.2 Select fill and common fill shall be obtained from offsite sources.

8. CUSHION FABRIC, HDPE MEMBRANE, DRAINAGE NET, AND FILTER FABRIC (Items 9, 10, 11, and 12)

8.1 MEASUREMENT

8.1.1 Measurement for payment for cushion fabric, HDPE membrane, drainage net, and filter fabric shall be made on a square foot basis measured in place.

8.2 PAYMENT

8.2.1 Payment shall be made at the individual unit prices per square foot, complete in place including hauling, storage, placing, anchoring, welding materials, boots or shrouds, attachments to penetrations, repairs, and extra stock.

9. TOPSOIL (Item 13)

9.1 MEASUREMENT

9.1.1 Measurement for payment for topsoil shall be on a cubic yard basis measured in place after compaction to the lines and grades shown on the Drawings.

9.2 PAYMENT

9.2.1 Payment for topsoil completed as specified herein shall be made at the unit price per cubic yard, complete in place including hauling, stockpiling, placing, compacting and final grading.

9.2.2 Topsoil shall be obtained from offsite sources. If the Contractor selects the alternative of using a mixture of compost and select fill for use as topsoil, this shall be so stated in the Bid Proposal.

10. SEEDING (Item 14)

10.1 MEASUREMENT

10.1.1 Measurement for payment for seeding shall be on a square yard basis measured in place.

10.2 PAYMENT

10.2.1 Payment for seeding completed as specified herein shall be made at the unit price per square yard, complete in place including hauling, storage, placing, mulch, watering, and establishment of turf.

11. GAS VENTS (Item 15)

11.1 MEASUREMENT

11.1.1 Measurement for payment for gas vents shall be on a per each basis measured installed and in place.

11.2 PAYMENT

11.2.1 Payment for gas vents completed as specified herein shall be made at the unit price per each, complete in place including boring, gravel pack, sealing, concrete, and all other appurtenant work.

END

01150-4

AR301727

SECTION 01200

PROJECT SCHEDULES

1. FORM OF SCHEDULES Prepare schedules in the form of a bar chart. The chart shall show the starting and completion dates of all activities on a linear horizontal time scale beginning with the dates of Notice to Proceed and indicating calendar days to completion. Identify the first work day of each week. Each activity or operation in the construction shall be represented by a bar. Each bar representing an activity shall be annotated to show the activity description, duration and cost. The Contractor shall indicate on the chart the important work activities that are critical to the timely overall completion of the project. Key dates for important features or portions of work features are milestone dates and shall be so indicated on the chart. Based on this chart, the Contractor shall prepare an earnings-time curve ("S" Curve) showing the rate of progress in terms of money and percent completion. Schedule progress may not include the value of materials or equipment delivered to the job site but not yet incorporated into the work. This schedule shall be the medium through which the timelessness of the Contractor's construction effort is appraised. The scale and spacing of the chart should allow space for notations and future revisions.

2. CONSTRUCTION PROGRESS SCHEDULE

- 2.1 Show the completion sequence of work by activity.
- 2.2 Show the dates for the beginning and completion of each major element of work. This list must include, but is not limited to:
 - 2.2.1 Project Start-up
 - 2.2.2 Security
 - 2.2.3 Site Surveys
 - 2.2.4 Air Monitoring/Sampling
 - 2.2.5 Laboratory Services
 - 2.2.6 Site Preparation
 - 2.2.7 Site Utilities and Temporary Facilities
 - 2.2.8 Staging/Storage Areas
 - 2.2.9 Decontamination Areas
 - 2.2.10 Location of borrow material
 - 2.2.11 Pond dewatering
 - 2.2.12 Placement of common fill
 - 2.2.13 Final Grading
 - 2.2.14 Membrane Placement
 - 2.2.15 Gas Vent Placement
 - 2.2.16 Ditch Placement
 - 2.2.17 Project close-out and closures of decontamination, staging and storage areas
 - 2.2.18 Fence Installation
 - 2.2.19 All Submittal Items

3. PROGRESS REVISIONS

- 3.1 Indicate progress of each activity to date of submission.
- 3.2 Show changes occurring since previous submission of schedule:
 - 3.2.1 Major changes in scope
 - 3.2.2 Activities modified since previous submission
 - 3.2.3 Revised projections of progress and completion
 - 3.2.4 Other identifiable changes
- 3.3 Provide a narrative report as needed to define:
 - 3.3.1 Problem areas, anticipated delays, and the impact on the schedule.
 - 3.3.2 Corrective action recommended, and its effect.
 - 3.3.3 The effect of changes on schedules or other subcontractors.

4. SUBMISSIONS

- 4.1 Submit initial schedules within fifteen (15) days after Notice to Proceed is made.
- 4.2 Submit revised schedules within five (5) days after receipt of notice of review comments from the Contracting Officer.
 - 4.2.1 The Contracting Officer shall review schedules and return a review copy within twenty-one (21) days after receipt.
 - 4.2.2 If required, the Contractor shall resubmit within seven (7) days after return of review copy.
 - 4.2.3 Submit revised progress schedules for each regular weekly progress meeting.
 - 4.2.4 Submit six (6) copies.

END

01200-2

AR301729

Technical Specifications
Heleva Landfill Site
Sirrine Environmental Consultants
Job No. F-1536

SECTION 01300

ENVIRONMENT PROTECTION

INDEX

1. GENERAL
2. IMPLEMENTATION
3. PRECONSTRUCTION SURVEY
4. PROTECTION OF LAND AREAS
5. PROTECTION OF TREES AND SHRUBS
6. PROTECTION OF WATER RESOURCES
7. WASTE DISPOSAL
8. BURNING
9. DUST CONTROL
10. EROSION CONTROL
11. CORRECTIVE ACTION
12. POST-CONSTRUCTION CLEANUP OR OBLITERATION

Technical Specifications
Heleva Landfill Site
Sirrine Environmental Consultants
Job No. F-1536

1. GENERAL. The Contractor shall perform all work in such manner as to minimize the polluting of air, water, or land, and shall, within reasonable limits, control noise and the disposal of solid waste materials, as well as other pollutants.

2. IMPLEMENTATION. Within 20 calendar days after Notice to Proceed and prior to commencement of the work at the site, the Contractor shall:

2.1 Submit in writing his detailed proposal for implementing the requirements for environmental pollution control specified herein.

2.2 Meet with representatives of the Contracting Officer to review and alter his proposal as needed for compliance with the environmental pollution control program.

3. PRECONSTRUCTION SURVEY. Prior to start of any onsite construction activities, the Contractor and the Contracting Officer shall make a joint condition survey after which the Contractor shall prepare a brief report indicating on a layout plan the condition of trees, shrubs and grassed areas immediately adjacent to the site of the work and adjacent to his assigned storage area and access route(s) as applicable. This report will be signed by both the Contracting Officer and Contractor upon mutual agreement as to its accuracy and completeness.

4. PROTECTION OF LAND AREAS. Except for any work or storage area and access routes specifically assigned for the use of the Contractor under this contract, the land areas outside the limits of permanent work performed under this contract shall, in accordance with CONTRACT CLAUSES clause: "Protection of Existing Vegetation, Structures, Utilities and Improvements," be preserved in their present condition. Contractor shall confine his

Technical Specifications
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construction activities to areas defined for work on the plans or specifically assigned for his use. In accordance with CONTRACT CLAUSES clause: "Operations and Storage Areas", storage and related areas and access routes required temporarily by the Contractor in the performance of the work will be assigned by the Contracting Officer. No other areas on Government premises shall be used by the Contractor without written consent of the Contracting Officer.

5. PROTECTION OF TREES AND SHRUBS. CONTRACT CLAUSES clause: "Protection of Existing Vegetation, Structures, Utilities and Improvements," is hereby supplemented as follows: Except for trees or shrubs marked on the plans to be removed, the Contractor shall not deface, injure or destroy trees or shrubs, nor remove or cut them without special authority. No ropes, cables, or guys shall be fastened to or attached to any existing nearby trees for anchorages.

5.1 Tree Protective Structures. Where, in the opinion of the Contracting Officer, trees may possibly be defaced, bruised, injured, or otherwise damaged by the Contractor's equipment or by his other operations, he may direct the Contractor to provide temporary protection of such trees by placing boards, planks, or poles around them.

5.2 Restoration of Damaged Trees. Any tree scarred or damaged by the Contractor's equipment or operations shall be restored as nearly as possible to its original condition at the Contractor's expense. All scars made on trees not designated on the plans to be removed by construction operations shall be coated as soon as possible with an approved tree wound dressing. Trees that are to remain, either within or outside established clearing limits, that are damaged by the Contractor so as to be beyond saving in the opinion of the Contracting Officer, shall be immediately removed, if so

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directed, and replaced with a nursery-grown tree of the same species and size.

6. PROTECTION OF WATER RESOURCES. The Contractor shall control the disposal of fuels, oils, bitumens, calcium chloride acids or harmful materials, both on and off the Government premises and shall comply with applicable Federal, State, County and Municipal laws concerning pollution of rivers and streams while performing work under this contract. Special measures shall be taken to prevent chemicals, fuels, oils, greases, bituminous materials, herbicides, and insecticides from entering ground or surface waters. Water used in onsite material processing, concrete curing, foundation and concrete cleanup, and other waste waters shall not be allowed to reenter a stream if an increase in the turbidity of the stream could result therefrom.

7. WASTE DISPOSAL. As part of his proposed implementation under paragraph 2, and prior to onsite construction, the Contractor shall submit a description of his scheme for disposing of waste materials resulting from the work under this contract. If any waste material is dumped in unauthorized areas, the Contractor shall remove the material and restore the area to the condition of the adjacent undisturbed areas. Where directed, contaminated ground shall be excavated, disposed of as approved, and replaced with suitable fill material, all at the expense of the Contractor.

8. BURNING. Air pollution restrictions applicable to this project are as follows. Material shall not be burned on the Government premises. If the Contractor elects to dispose of waste materials off the Government premises, by burning, he shall make his own arrangements for such burning area and shall, as specified in CONTRACT CLAUSES clause: "Permits and Responsibilities," conform to all local regulations.

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9. DUST CONTROL. The Contractor shall maintain all excavations, embankments, stockpiles, access roads, waste areas, borrow areas, and all other work areas free from excess dust to such reasonable degree as to avoid causing a hazard or nuisance to the Using Service or to others. Approved temporary methods consisting of sprinkling, chemical treatment, light bituminous treatment or similar methods will be permitted to control dust. Dust control shall be performed as the work proceeds and whenever a dust nuisance or hazard occurs.

10. EROSION CONTROL. Surface drainage from cuts and fills within the construction limits, whether or not completed, and from borrow and waste disposal areas, shall be graded to control erosion within acceptable limits. Temporary control measures shall be provided and maintained until permanent drainage facilities are completed and operative and an appropriate ground cover has been planted. The area of bare soil exposed at any one time by construction operations should be held to a minimum.

11. CORRECTIVE ACTION. The Contractor shall, upon receipt of a notice in writing of any noncompliance with the foregoing provisions, take immediate corrective action. If the Contractor fails or refuses to comply promptly, the Contracting Officer may issue an order stopping all or part of the work until satisfactory corrective action has been taken. No part of the time lost due to any such stop orders shall be made the subject of a claim for extension of time or for excess costs of damages by the Contractor unless it was later determined that the Contractor was in compliance.

12. POST-CONSTRUCTION CLEANUP OR OBLITERATION. In accordance with CONTRACT CLAUSES clause: "Cleaning Up," the Contractor shall, unless otherwise instructed in writing by the Contracting Officer, obliterate all signs of

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temporary construction facilities such as haul roads, work areas, structures, foundations of temporary structures, stockpiles of excess or waste materials, and other vestiges of construction prior to final acceptance of the work. The disturbed areas shall be graded and filled and the entire area seeded.